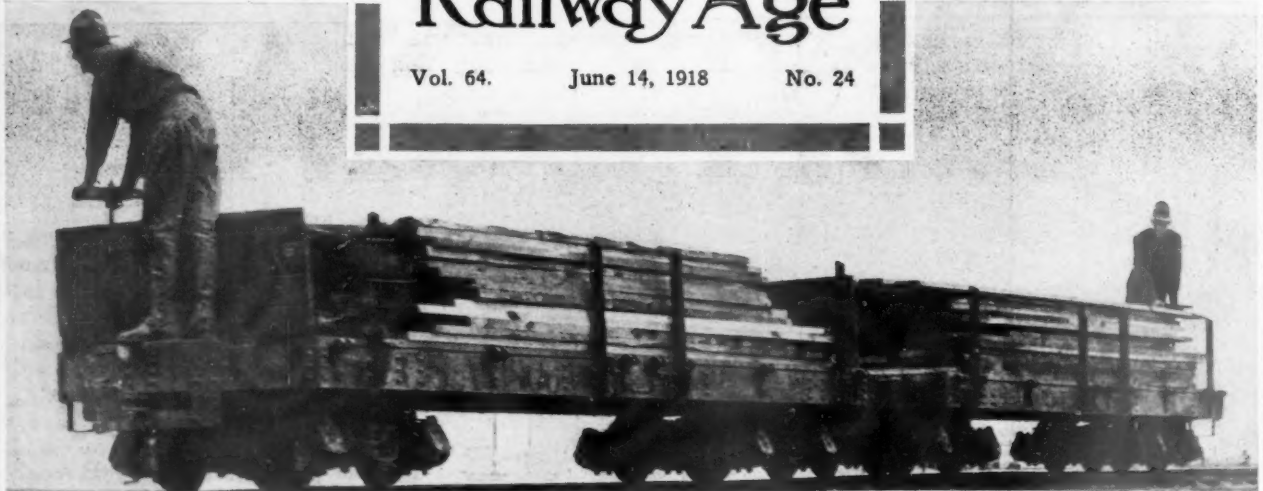


# Railway Age

Vol. 64.

June 14, 1918

No. 24



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EDWARD A. SIMMONS, Pres. L. B. SHERMAN, Vice-Pres. HENRY LEE, Vice-Pres. & Treas. M. H. WIUM, Secretary.  
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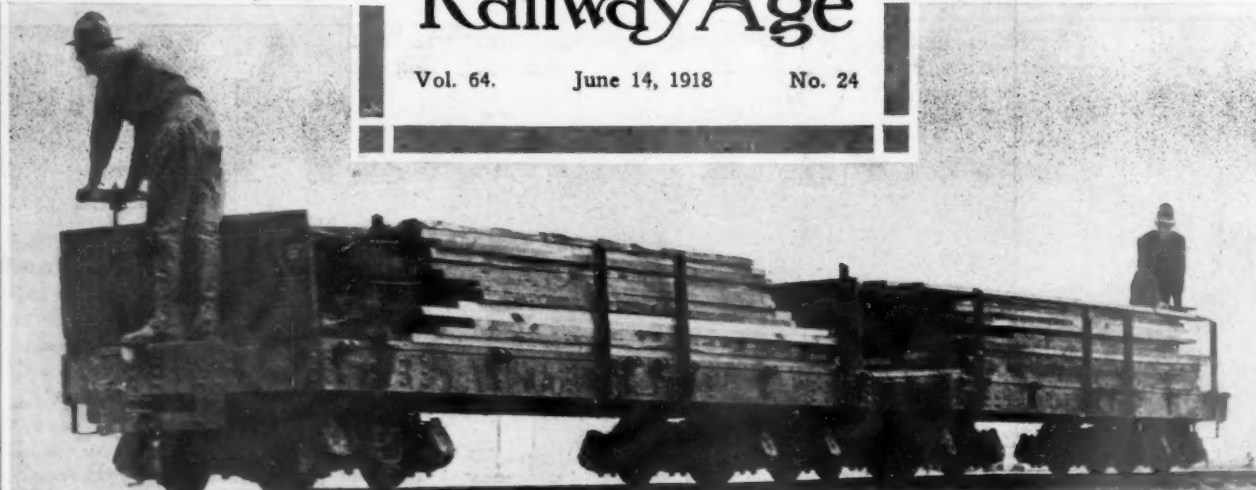
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# EDITORIAL

## Railway Age

The report of the standing committee on disbursement accounts of the Association of American Railway Accounting

### Mechanical Office Devices

Officers, which is published in part elsewhere in this issue, is the most comprehensive discussion of the use of mechanical devices in disbursement accounting that has ever been put on record so far as we know. There were two other reports, one on the use of mechanical devices in passenger accounting and one on the use of mechanical devices in freight accounting, both of which are worthy of careful study, but are not printed in our report of the meeting because of a lack of space and of a certain amount of overlapping. A. P. Disbrow, auditor of disbursements of the Erie, is chairman of the committee on disbursement accounts; and the Erie has been one of the most progressive of the larger roads in adopting and adapting mechanical devices to audit office work. The committee has had, because of war conditions, an unusual opportunity to study the results of substituting girls and labor-saving devices for expert men. The report is, therefore, timely and might well be studied by executive officers as well as by accounting officers.

Under this caption, Collier's Weekly published in its issue for June 8 the following editorial:

### "Our Railways Are Good— Why?"

"Those who know often speak of our American railways as the best on earth. The underlying reason is fairly well shown in one recent issue of the 'Railway Age.' In glancing it over we noticed a summary of a 200-page report by a special committee organized over five years ago to investigate the stresses in railway tracks. They made over 250,000 observations on rail strains alone, and the work is continuing. In time we are going to know how a railway track ought to be built and why, instead of leaving the roadbed largely to the professional instinct of the section boss and his gang. Another group of practical men have been getting data as to the transverse fissures or splits in steel rails, and there will be fewer accidents in years to come because of their work. Another paper, bristling with tables and diagrams, tells how to reduce the 'dynamic augment' for heavy locomotives. It seems that the big locomotive pounds on the rails because some of its parts are relatively too heavy and that various modern (and lighter) alloys of steel will help cure that bad habit. A fourth paper points out the deep interest in education that railroaders must take if their forces are to have the right human training and intelligence. It appears that our railways ought to co-operate with our public schools. All this from one number of one technical paper, and we have indicated only the high points! Busy brains make good railroading, and the U. S. A. has 'em."

Collier's has indicated the main reason why the railways of the United States have been so efficiently managed. Their officers, although in reality only employees, have taken a keener interest in, and have worked harder to promote, efficiency than most men do in the case of businesses they them-

selves own. This has been mainly because promotion in the railway business has usually been based on merit; because there has been plenty of room for individual initiative; and because the rewards in reputation, power and income which have been won by the most energetic and able men have been in proportion to their energy and ability. These incentives will make "busy brains" in any line of activity. Also, the destruction of these incentives, which would inevitably occur under government ownership, would soon produce idle instead of busy brains; and then inefficiency speedily would succeed efficiency. Did any paper ever publish an issue containing as many articles regarding work being done along different lines to increase efficiency in the postoffice department as the *Railway Age* published in the issue referred to (February 22, 1918) regarding work being done along various lines to increase efficiency on the railways?

The Railroad Administration is beginning to decentralize its organization. This is a gratifying tendency. Decentraliza-

### Decentralizing Railroad Management

tion will contribute toward increased efficiency of operation, and at the same time render it practicable for the railways to deal more satisfactorily with local conditions. Since government operation was adopted the *Railway Age* has several times commented on the dangerous centralization of management which was occurring. We have also suggested a reorganization of the railways along regional lines after the war as having more prospective advantages and fewer prospective disadvantages than any other plan which could be adopted under private ownership and management (See editorial "The Future of the Railways," *Railway Age*, January 18, page 159; also "Lord Shaughnessy's Warning," same issue; and "Revolutionizing Railway Organizations," March 22, page 694). The Railroad Administration originally divided the country into three regions, eastern, southern and western, and put a regional director in charge of operation in each of them. The *Railway Age* contended that these regions were too large even for present operating purposes, and suggested that after the war, if the railways were reorganized along regional lines, there should be created not less than five and probably not more than ten regions. The Railroad Administration has now divided the eastern region into three regions, and it seems probable that it will find it expedient to subdivide the western and southern regions. If this is done it will place in charge of the regional directors mileages of railway whose operation they can supervise more effectively. It will also give opportunity to compare the results gained on different railways in the same region, and on the railways of different regions, in a way that will be stimulating to operating efficiency generally. While the program of decentralization is being carried out it is to be hoped it will be made to include the department of purchases. This department has laid itself open to more just criticism than any other branch of the Railroad Administration. The delays which have occurred in the placing of orders for equipment, and for the specialities to be used on it, has seriously reduced the number of cars and locomotives it will be possible to make and deliver in time for the movement of the heavy business of next fall and winter. Some

severe criticisms can be and are being passed also on the way in which in many cases orders have been divided. There have been altogether too many instances in which the prices of the things bought apparently have been considered to the exclusion of quality. Developments up to the present time indicate that the concentration of the purchase of equipment, rail and coal, in the Washington office was a serious mistake. The sooner steps are taken to rectify this mistake in some way the better it will be for all concerned. The policy of decentralization which apparently is being entered upon is based on sound principles of organization. What seems to be required to get the best results from the railways, whether under government or private management, is *centralized control and decentralized management*. Centralized management of a railway system as large as ours would prove a failure whether attempted under government or under private control. But by dividing and operating the railways in such regional groups as are suggested by geographical and commercial conditions the Railroad Administration will get better results during the war than it would under a highly centralized plan, and may point the way to a satisfactory solution of the railroad problem after the war.

### Continuous Truss Bridges

STEEL BRIDGE CONSTRUCTION has presented a most contradictory aspect since the beginning of the European War. The number and size of the bridge projects have been largely restricted by a lack of funds and the high price of steel; nevertheless probably greater progress has been made in the development of materials in new designs and in improved fabrication and erection methods than in any corresponding period in recent years. One marked departure from former practice, in this country at least, has been the use of superstructures continuous over more than two supports, a condition which has been studiously avoided even where continuity was a prime requisite of the process of erection. Thus in cantilever bridges it has been the general practice to cut away erection members so that a simple span was suspended between the projecting arms, while in cases where one simple span was erected by the cantilever process from an adjoining one, the two spans were cut apart as soon as the second span became self-supporting.

An example of a marked departure from this practice is to be found in the Kettle Rapids bridge on the Hudson's Bay Railway described on another page of this issue. The trusses for the three spans are continuous from end to end. This is one of three important railroad bridges under construction within the last 18 months which follow this practice. The Bessemer & Lake Erie over the Allegheny river has two groups of three continuous spans, and the Chesapeake & Ohio Northern bridge over the Ohio at Sciotoville has continuous trusses 1,500 ft. long, supported on three piers.

Considering this question from the theoretical standpoint there is nothing new in this idea; on the other hand practical considerations have discouraged this form of construction in the past. Girder bridges for track elevation subways having intermediate supports were at one time constructed with continuous plate girders, but this proved objectionable in these short spans because the reversal of reactions on the abutments with the passage of trains resulted in the rapid pounding of the bridge seats. This condition has been avoided in the Bessemer & Lake Erie bridge by the introduction of a counter weight at the end of one of the shorter spans.

The prime requirement, that of unyielding supports, was satisfied beyond any question at the site of all of the three bridges mentioned above. Each afforded rock bottom at a readily available depth. Beyond this, experience and marked improvement in the last three years in the handling of the

heavy bridge loads with high power jacks was probably the important factor in the adoption of these designs, since it assured success in obtaining the necessary adjustment of the bearing elevations to obtain the assumed distribution of stresses. While complications in the calculations of stresses once formed a formidable obstacle, they no longer constitute an argument against this form of design.

### Importance of Yard

#### Projects Recognized

THE LARGEST ITEM in the classified statement of additions and betterments authorized by the Railroad Administration was that for additional yard tracks and sidings. This amounted to \$81,383,955 as compared to \$64,297,478 for shops, buildings and engine houses and \$51,207,704 for additional main tracks, the next largest items. The total of these three items, \$196,889,137, all of which will be applied to increasing the capacity of existing railway lines in this country, represents 44.6 per cent of the entire appropriation for additions and betterments. The most significant fact concerning these allotments is that they are based on a thorough study of the entire railway situation by men eminently equipped for the work and supplied with the most comprehensive array of data ever compiled on the physical needs of the American transportation system. It is true that the estimates submitted by the roads were based on their war needs and that they were judged very largely on that basis. Nevertheless, the work authorized represents to a large extent exactly what the roads would have done of their own volition in times of peace, had they been free to make adequate expenditures.

The proportion of the total allotted to terminal work corresponds to the prevailing knowledge of railway men as to the relative need of this important part of the railway plant. While the necessity for the extension of facilities of this class was not demonstrated in as spectacular a manner last winter as was the demand for better facilities for the repair and care of locomotives, the dire need for more yard and passing track capacity has been manifested indirectly in so many ways and presents a condition so well understood as to require no elaboration. Additional main tracks are necessary but not in the same degree as yard tracks and sidings. There are cases where main tracks are taxed absolutely to capacity and some large expenditures are authorized to overcome this condition. Thus the Cincinnati, New Orleans & Texas Pacific was granted \$3,960,000 and the Cleveland, Cincinnati, Chicago & St. Louis \$4,409,874 for this purpose. But while trains are delayed in getting through sections of single track on a busy road, it is far more common to see trains held out on the line awaiting opportunity to enter an overloaded terminal.

Much money will be spent for the improvement and extension of existing yards, with the object of relieving the stress as quickly as possible. It is but human to look for a "key log" with the hope that the jam may be relieved by proper attention at some critical point, but too often the layout is so hopelessly inadequate that alterations or enlargement can result only in impotent patch work. For this reason it is not surprising to find that the recently announced budget covers authority for not a few large new yards, some of them on sites entirely independent of existing developments.

It requires foresight and courage to spend a million dollars on a freight yard. The same amount spent for second track would look much more effective, and probably gives quicker returns, but from the number of million-dollar appropria-



tions in the list, it is evident that the need for yards is thoroughly appreciated. The size of the appropriation for yards and side tracks is one of the most hopeful things about the construction program, and this, together with the amount set aside for shop buildings, engine houses, etc., should, when the work is finished, go a long way toward making the American railroads a better transportation machine both in war and in peace.

## The Vindication of the Railway Managers

GOVERNMENT OPERATION of the railways is vindicating private management. Many of the most important things it is doing are things which the management of the railway companies tried to do before government operation was adopted and which the government through regulation or otherwise prevented. It is showing that the railway situation under private management would have been made much better in some respects if the public authorities would have permitted it.

Many of the leading railway presidents will remain officers of the companies under the new regime, but almost all the men who are being appointed to important executive positions in the Railroad Administration are former railway officers and are being selected because they are the best men for the positions. The Hearst newspapers and other socialistic publications assert that inefficiency broke down private management. If private management was incompetent, how did it happen to develop and put in important places the men the government regards as the best fitted to operate the railways in the present crisis? The managements of the railways have been criticized and regulated by many men in both private and public life who have set themselves up as authorities on railway affairs. Why has none of these been put in charge of the operation of a railway? Justice Brandeis, Clifford Thorne, Commissioner Charles C. McChord, the editor of the Hearst newspapers, for example, have overflowed with criticism of the management of the railways in the past and with suggestions as to how it could be improved. The Hearst newspapers are now telling the director general in detail just what he ought to do. Why in this great emergency, when their knowledge of how to run a railway could be so usefully employed, do we not find the names of these men in the lists of those being appointed as regional directors and federal managers? Doubtless we would under government ownership in time of peace. Under government operation in time of war their qualifications do not commend them to the serious consideration of the government.

For many years before the adoption of government operation, railway managers endeavored to reduce wasteful competition. They tried to do this by making pools of traffic and earnings, by organizing traffic associations, by forming community of interest arrangements, by causing their companies to acquire stock interests in each other, and by actual consolidations. The companies and their managers were denounced, persecuted and prosecuted for these efforts. Law after law was passed, court decision after court decision was rendered, to maintain absolutely unrestricted competition.

The railway managers contended that these laws and court decisions were unjust to the railways and harmful to the public, but legislatures, regulating authorities and courts were deaf to their arguments. On December 28, 1917, it was still contrary to our laws and public policy for parallel railways to co-operate in handling traffic or to co-ordinate their facilities. On December 29, 1917, however, the gov-

ernment had taken charge, and in this short interval of time had discovered that, contrary to its previous opinion, all competition or semblance of competition was wrong, and that the railways must not merely co-operate, but must be merged into and operated as a single system. Like most sudden converts, the government became a more zealous exponent of railroad monopoly than the railway owners and managers ever were. Furthermore, the general public endorsed the new policy unreservedly as it did the old, and apparently did not realize that the government had turned a somersault. The very people and publications who before egged the government on to compel the railways to compete, now heartily commend it because it has stopped the "wasteful competition." They consider it a great achievement for the government to have abolished the rivalries between the railways which until last December it forced them to continue.

For many years the railway companies had been complaining that they were subject to too many masters. They asked that exclusive federal regulation be substituted for regulation by both the state and national governments. State and federal regulation continued, however, to vie with each other in heaping burdens and restrictions upon them. But when operation by the federal government was adopted, it instantly became clear to the federal authorities that it would be impracticable for them to manage the railways efficiently, without discrimination and in the interest of the entire country, if the states were allowed to regulate operation, to impose taxes and to fix rates regardless of the policy followed by the federal government.

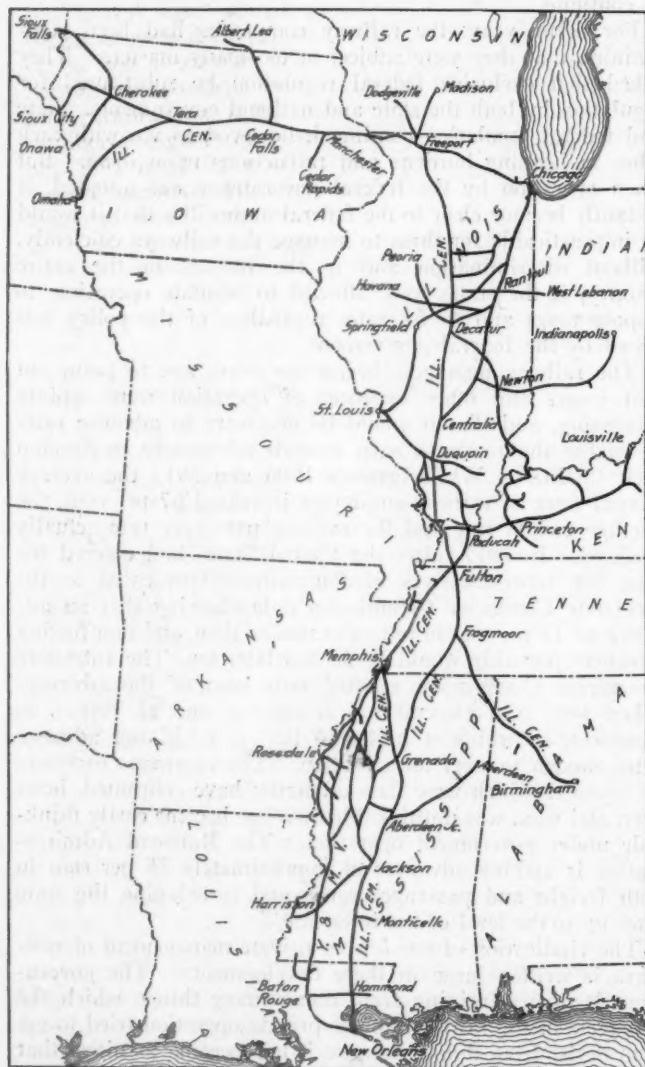
The railway managers began ten years ago to point out that wages and other expenses of operation were rapidly increasing, and that it would be necessary to advance rates to enable the roads to earn enough adequately to develop their facilities. While between 1906 and 1917 the average annual wage of railway employees increased 67 per cent, the average freight rate and the average passenger rate actually declined. In 1917, after the United States had entered the war, the representatives of the railways presented to the Interstate Commerce Commission data showing that an advance of 15 per cent in rates was needed then, and that further advances probably would be needed later on. The Interstate Commerce Commission granted only part of the advances asked for. On December 5 it sent a special report to Congress, in which it indicated that it could not advance rates enough to meet the situation. The enormous increases in expenses which were then occurring have continued, however, and what was unthinkable then has become easily thinkable under government operation. The Railroad Administration is making advances of approximately 25 per cent in both freight and passenger rates, and is bringing the state rates up to the level of the interstate.

The vindication of our former private management of railways is written large in these developments. The government is now refraining from doing many things which the managers of the railways under private operation tried to get it to desist from doing, because it has become manifest that they were unwise and contrary to the public interest. It is doing many things which the railway managers tried to get it to do because it has become clear that they are wise and in the public interest. However disagreeable some features of the existing situation may be to men like Frank Trumbull of the Chesapeake & Ohio, E. P. Ripley of the Santa Fe, Samuel Rea of the Pennsylvania, Daniel Willard of the Baltimore & Ohio and Fairfax Harrison of the Southern, who are remaining in the service of their companies and therefore ceasing to be managing railway executives, they can have the satisfaction of feeling that government operation is vindicating many of the most important public policies for which they have stood.

## Illinois Central

THE ILLINOIS CENTRAL held its operating ratio in 1917 down to a slightly lower figure than 1916; in fact, it was lower in 1917 than in any year since 1907. It was 71.54 in 1917, 71.66 in 1916, and, prior to that, for a number of years, ranged around 76.

The most astonishing part of the 1917 performance, however, was the fact that with an increase of over 21 per cent in ton mileage of freight and of over 15 per cent in passenger mileage, there was an increase of only 17.97 per cent in operating expenses, notwithstanding the fact that there was an increase of 8.60 per cent in freight train miles and 5.14 per cent in passenger train mileage. Furthermore, there were substantial increases in maintenance expenses. The roads



The Illinois Central and the Yazoo & Mississippi Valley

whose reports have been reviewed so far this year in these columns which have been able to hold down the operating ratio in 1917 to anything comparable to that of 1916 did so either through a large reduction in train mileage, compared to business moved, or smaller maintenance expenses, or both. The Illinois Central did very well in increasing its freight train load; the average in 1917 for all freight being 700 tons as against an average in 1916 of 624 tons; but the fact that expenses per train mile did not go up in greater proportion than they did is the most remarkable part of the year's operations. It is true that transportation expenses—the out-of-

pocket cost of moving the business—increased nearly 30 per cent, but on some of the eastern roads transportation expenses increased to an even greater per cent with an actual reduction in passenger train mileage and only a very slight increase in freight train mileage; while the Illinois Central's passenger train mileage increased over 5 per cent and freight train mileage over 8 per cent.

The Illinois Central charged nearly 14 per cent more for maintenance of way and over 7 per cent more for maintenance of equipment in 1917 than in 1916. As a matter of fact, however, because of shortage of labor and materials, there was \$959,000 charged to maintenance of way expenses in 1917, which was carried over as a reserve into 1918. The amount charged was \$11,289,000; an increase over 1916 of \$1,368,000, but the amount spent was approximately \$10,300,000 or only a few hundred thousand dollars more than was spent in 1916. Similarly, in maintenance of equipment, while \$18,214,000 was charged, an increase of \$1,233,000, \$475,000 of this increase was additional charges for depreciation. This of course, is a bookkeeping charge only and, while the actual amount spent for repairs of locomotives was considerably larger in 1917 than in 1916, repairs of freight train cars cost considerably less.

Notwithstanding the scarcity of labor and high prices of materials, the Illinois Central spent \$15,643,000 for additions and betterments, which included \$6,047,000 for freight cars, \$601,000 for locomotives, and \$666,000 for passenger train cars. The largest items of additions to roadway were \$997,000 for station and office buildings, \$640,000 for grading, \$722,000 for bridges and culverts, and \$674,000 for other track material. The station and office building at Sixty-third street, Chicago, was completed, as was also the station at Mattoon, Illinois. Quite a number of stations at smaller towns and cities were enlarged and improved. There was \$549,000 spent for signals and interlocking plants. When two short sections, one between Vaughn, Miss., and Canton, and the other between Canton and Asylum, are completed, the entire line of the Illinois Central from Chicago to New Orleans will be completely block signalled. During the year there were installed 381 track miles of automatic block signals.

The only new locomotives which were put in service were 14 6-wheel switching locomotives; but 18 saturated steam locomotives were equipped with superheaters.

The character of traffic on the Illinois Central did not change greatly in 1917 as compared with 1916, with the exception of a larger proportion of coal being carried and a smaller proportion of products of agriculture. The following table shows the percentage of each class of commodity carried to the total freight tonnage handled:

	1917.	1916.
Products of agriculture.....	14.44	17.84
Products of animals.....	2.83	3.21
Products of mines.....	48.24	45.37
Products of forests.....	15.76	15.29
Manufactures.....	12.49	12.08
Merchandise.....	4.16	4.59
Miscellaneous.....	2.08	1.62

The average length of haul of freight was quite a little longer in 1917; being 264 miles. The average revenue per ton per mile was less by two-tenths of a mill; being 5.2 mills in 1917. There was a good gain in car loading; the average loading per loaded car was 26.94 tons in 1917 as against 24.09 tons in 1916.

The Illinois Central earned its dividends comfortably in 1917, even without taking into its income any payment on the part of the Yazoo & Mississippi Valley interest on the Louisville, New Orleans & Texas second mortgage income bonds, or dividends on the Dubuque & Sioux City stock owned. Railway operating income amounted to \$18,606,000; an increase of \$1,846,000. The two reductions in non-operating income just mentioned brought the amount down to \$8,009,000, as compared with \$13,016,000. After the pay-



ment of interest charges, rentals, etc., there was \$15,016,000 available for dividends in 1917 and \$17,466,000 in 1916. Dividends call for \$7,924,000.

The following table shows the principal figures for operation in 1917 compared with 1916:

	1917.	1916.
Average mileage operated.....	4,766	4,767
Freight revenue.....	\$58,443,367	\$49,437,830
Passenger Revenue.....	16,908,698	14,222,849
Total operating revenues.....	87,144,786	73,740,266
Maintenance of way and structures.....	11,289,315	9,921,656
Maintenance of equipment.....	18,214,178	16,980,995
Traffic.....	1,332,011	1,303,244
Transportation.....	29,076,858	22,553,004
General.....	2,083,165	1,848,339
Total operating expenses.....	62,339,834	52,843,149
Taxes.....	6,186,365	4,116,065
Operating Income.....	18,606,217	16,759,239
Gross Income.....	26,615,582	29,775,070
Net income.....	15,191,326	17,627,202

## Chicago & North Western

INCREASES IN THE AMOUNTS PAID to employees, for fuel, for repairs to locomotives and rolling stock, and for maintenance of way and structures, were the principal factors preventing the Chicago & North Western from realizing on a 10 per cent increase in operating revenues in the year ended December 31, 1917.

The total operating revenues for the year were \$108,265,000, as compared with \$97,979,000 in 1916. Operating expenses, however, increased from \$65,121,000 in 1916 to \$78,759,000 in 1917. The increase of 20 per cent in expenses, comparing with 10 per cent increase in business, increased the operating ratio from 66.46 per cent in 1916 to

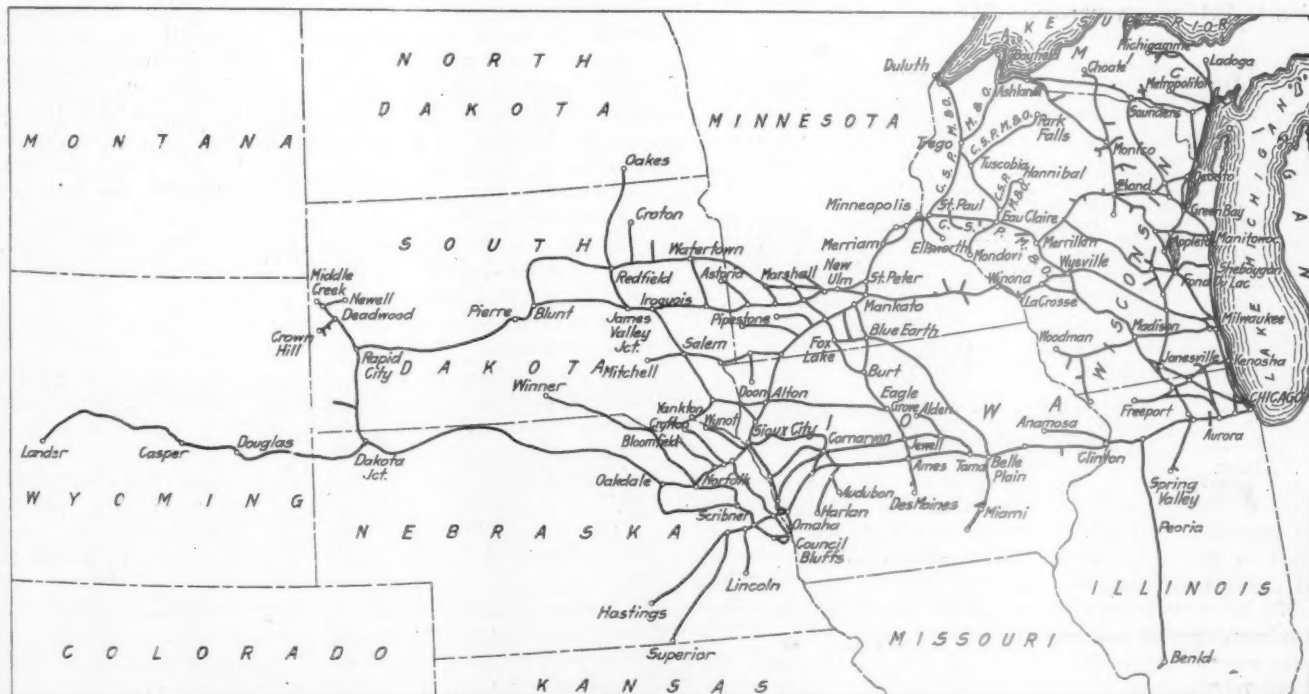
The increase in payments to labor for 1917 as against 1916 totaled nearly \$9,000,000 of which over \$5,000,000 was due to higher rates of compensation. The percentage of operating expenses paid to labor in 1917 was 60.12 as compared with 59.31 in 1916, or 58.27 in the calendar year ended December 31, 1915.

The increase in cost of fuel for locomotives is an old story, but it is interesting to observe that fuel for train locomotives alone showed an increase of more than \$2,000,000 and was 33 per cent over 1916. The total increase in costs of fuel for locomotives was \$2,651,800.

The increase in maintenance of way charges in 1917 over 1916 was \$1,563,000 and followed a similar increase of slightly more than that amount in 1916 over 1915. The increases, of course, were principally in track laying and surfacing, the expenditures for that purpose having increased about 25 per cent in each year. The increase in cost of repairs to locomotives and freight cars similarly represented something that was evident in 1916, but it is noteworthy that whereas in 1916 there was an increase in charges to maintenance of equipment of \$1,800,000 over 1915, in 1917 the total again increased \$2,800,000 over 1916, increases in successive years of about 14 and 19 per cent. These increases are especially emphasized by a comparison on the basis of units:

	1917.	1916.	1915.
Maintenance of way per mile.....	1,652	1,459	1,261
Repairs per locomotive.....	3,292	2,748	2,281
Repairs per freight car.....	87	78	66
Repairs per passenger car.....	721	594	501

It should be added however that, even with these increases, so great were the increases in transportation expenses the



The Chicago & North Western

72.75 in 1917, and the net revenue from operation amounting to \$29,506,000 in 1917 was about \$3,000,000 less than in the previous year. Increases in taxes and decreases in non-operating income were partly compensated for by decreases in interest charges, so that the net income of \$17,125,000 in 1917, was likewise \$3,000,000 less than in 1916. The usual dividends of 7 per cent were paid, but for the second half of the year on a larger capitalization so that the balance for the year of \$5,265,000 was just over \$4,000,000 less than in 1916.

charges for maintenance of way in 1917 were 17 per cent of the total operating expenses as compared with 18 per cent in 1916, and the charges for maintenance of equipment were 22.7 per cent of total operating expenses as compared with 23 per cent in 1916. The percentage of total operating expenses chargeable to transportation increased from 52.9 in 1916 to 54.8 per cent in 1917.

The North Western's freight business in 1917 was 10.5 per cent greater than in 1916 on the basis of freight revenue, 7 per cent greater on the basis of tons of freight carried, but

13 per cent greater on the basis of ton mileage carried. The revenue per ton mile on the North Western is somewhat low compared with some of the other roads in its territory, but it is interesting to observe that whereas in 1915 the average revenue per ton mile was 8.3 mills; in 1916 it was 8.0 mills and in 1917 only 7.8 mills. The total tonnage was 60,288,000 as compared with 56,408,000 in 1916 and the ton mileage of revenue freight was 9,220,973,000 in 1917 as against 8,130,953,000 in 1916.

The tendency towards heavier train loads continued in 1917 assisted presumably by the energetic campaign for heavier car loading. The average train load increased during the year from 510 tons to 544 tons, nearly 7 per cent. The average load per loaded car increased nearly 9 per cent, from 23 to 25 tons. The amount of equipment on hand of all classes was greater on December 31, 1917, than on December 31, 1916, the number of locomotives being 128 greater and the number of freight cars 3,834 greater. The increases in each case were undoubtedly due as much to caution in retiring old equipment as to additions of new equipment.

During the year the North Western issued \$15,000,000 of common stock, equal to 10 per cent of its total preferred and common. It redeemed \$4,541,500 of funded debt, of which something over a million was equipment bonds and \$3,118,000 was 7 per cent first mortgage bonds of the North Western Union Railway maturing June 1, 1917. At the end of the year the company had \$5,722,000 cash, nearly \$5,000,000 less than on December 31, 1916. Loans and bills payable at the end of the year totaled \$2,295,000 as against no loans or bills payable on December 31, 1916.

The following table shows the principal figures for operation in 1917 as compared in 1916:

	1917.	1916.
Average mile operated.....	8,108	8,108
Freight revenue .....	\$72,264,461	\$65,380,165
Passenger revenue .....	24,516,358	22,329,509
Total operating revenue.....	108,264,983	97,978,844
Maintenance of way and structure.	13,394,113	11,831,004
Maintenance of equipment.....	17,899,338	15,087,346
Traffic expenses .....	1,354,007	1,340,016
Transportation expenses .....	43,177,646	34,433,717
General expenses .....	2,306,507	1,982,629
Total operating expenses.....	78,758,989	65,120,827
Taxes .....	5,677,480	5,016,527
Operating income .....	23,815,406	27,835,731
Gross income .....	27,311,451	30,794,904
Net income .....	17,125,030	20,368,924

## New Books

*Poor's Manual of Industrials for 1918. 2,736 pages, bound in cloth. Published by Poor's Manual Company, 80 Lafayette Street. New York, Price \$10.*

Poor's Manual now occupies somewhat the same position as regards industrials as Poor's Manual of Railroads occupied in the railroad field twenty-five or thirty years ago. It is the most complete source of information about industrials in one volume which we have. Now that the railroads are being operated under government control, and public utilities are finding it difficult to make both ends meet, industrials offer one of the only attractive fields for investments outside of government bonds. It is needless to say that accuracy and intelligence are used in the compilation of the figures which are included in Poor's Manual of Industrials. In most cases, there is an income account and general balance sheet given for each company, and a description of the stock and other securities outstanding. There is also, in most cases, a short description of the character of the business done by each particular company, but, if it were possible to enlarge any part of this already very comprehensive manual, additional space might be used to give further facts in regard to the character of the business. No matter how small a statistical library a banker or individual can afford, Poor's Manual of Industrials must of necessity be included in it.

## Letters to the Editor

### An Opportunity for the Railway Supply Manufacturers' Association

NEW YORK.

#### TO THE EDITOR:

As an ex-president of the Railway Supply Manufacturers' Association, I am naturally still interested in the present and future of that association, particularly because of the fact that ever since I started to work on its committees I have felt that the organization should be of a more permanent nature so as to work for the best interests of the railway supply fraternity at all times.

Since this world war has interfered with the holding of our annual conventions in conjunction with the M. C. B. and M. M. Associations, it appears that the R. S. M. A. has practically passed out of existence. To me the passing of this association, if such it be, is not a pleasant thought. I am addressing this letter to you in hopes that it will be published, and that sufficient interest will be created for us to get together and in some way perpetuate the old R. S. M. A.

Many other industries are fully organized, and have their duly authorized officers and committees who are co-operating with the government, with the idea of facilitating the big job in hand. The biggest burden of all has fallen to the railroads, and an industry which supplies the railroads with all kinds of equipment is essentially an important factor in such a crisis. In any crisis, the necessity of the right kind of organization and organized effort is essential. During the past weeks, when so many of us have had to spend our time in Washington, the lack of the proper organization has been brought home to us. Since the railroads have been taken over by the government, we have had to conform to the new conditions, and, I believe I may say without fear of contradiction, that no other body of men representing such tremendously big interests have gone to the capitol unorganized.

The ramifications of the railway supply industry are such that individual effort, while it is of service, ofttime fails in accomplishing the best results, and necessarily means the loss of much time and energy, to say nothing of unnecessary waste of money. This is the time when we should not only talk conservation, but should organize our efforts along conservation lines, and act accordingly. Our President rightfully felt that the railroads could better serve the common cause by being brought under one head and operated as a unit during this crisis, and, I believe that the wisdom of his action has already been demonstrated. In dealing with this centralized authority, we should unite our efforts and organize in such a way that the administration could call upon representative and authorized officials of our organization for general information, which they could collect from its members. I do not mean to suggest the elimination of the individual interest, but such representatives could properly handle the preliminaries, and would save the government officials much time and energy.

As a fraternity, we have never gotten together to discuss our every-day business problems, for which there may have been good reason in the past, but I feel that we can best show our patriotism by getting together and offering Uncle Sam the services of a united railway supply fraternity. Let's get together and perpetuate the R. S. M. A., for which so many of us have worked in the past, and make it an organization of service of which we will all be proud.

OSCAR F. OSTBY.





General View of Bridge.

## Difficult Bridge Construction in a Cold Country\*

### Hudson Bay Railway Trusses Over Kettle Rapids Are Continuous Over Four Supports

By W. Chase Thomson  
Consulting Engineer, Montreal, Que.

THE HUDSON BAY RAILWAY extends from The Pas, the northern terminus of the Canadian Northern in Manitoba, to Port Nelson on Hudson Bay, a distance of 424 miles. Although primarily intended as a short route for the export of grain to Europe, the railway opens up a valuable territory, rich in minerals, fish and pulp-wood and of great agricultural possibilities. The grading has been completed throughout, and the rails have been laid to mile 332. The Kettle Rapids bridge is at the second crossing of

vention of Lake Winnipeg, which serves as a huge reservoir, the flow of water in this river throughout the year is remarkably uniform. At Kettle Rapids, the lowest water level recorded to date is 316.0, and the highest water level, with the river unobstructed by ice, 319.0, a difference of only 3 ft. But, with the freezing of the river and the consequent jamming of huge quantities of drift ice, the channel is greatly obstructed and the water rises suddenly. In the winter of 1916-17, a height of 338.5 was reached on February 3.

The highest ice peaks have always been found on the islands, where piers 2 and 3 are located. In the winter of 1916-17, when the water was at its maximum height of 338.5, there were ice peaks as high as 344.5, the same as had been observed during the winter of 1913-14; but, with the fall of the water, they settled to elevation 342.0, and remained there until melted.

The main channel at the bridge site is only 350 ft. wide, and it is estimated to be about 200 ft. deep at the center; the current is very swift, and there is always a certain amount of open water. Directly above and below the bridge site, however, the river freezes all the way across, but only after the jamming of the ice and the consequent rising of the water. It is evident that there can never be any danger from ice, either to the superstructure or to the piers; for the steelwork is 15 ft. clear of the highest fixed ice peaks, and there is running ice only when the water level is much below its maximum elevation.

In locating the line, advantage was taken of two very conveniently placed islands, allowing a central span of 400 ft., with piers and abutments on the solid rock. This rock is of pre-cambrian origin and is a tough granitoid gneiss.

The bridge is a continuous structure 1,000 ft. long, having a channel span of 400 ft. and two side spans of 300 ft. each. The trusses or main girders are of the subdivided Warren type, 50 ft. deep throughout and 24 ft. apart center to center,



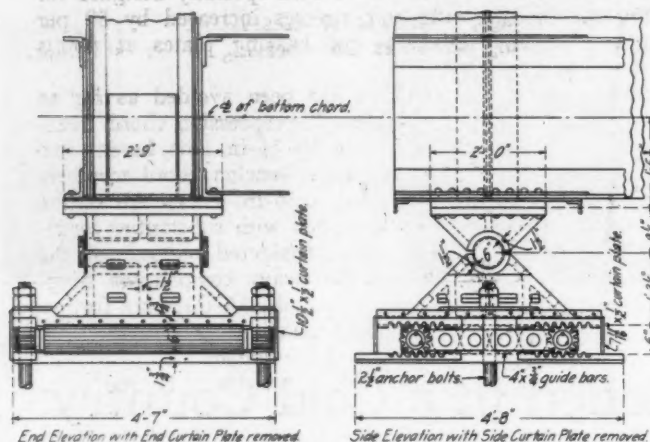
View from Top of Cableway Tower

the Nelson river, or Kettle Rapids, mile 332, the present end of steel.

The Nelson is one of the great rivers of Canada, its drainage including the prairies of Alberta, Saskatchewan and Manitoba on the west, the Red River valley on the south and part of Ontario on the east; but, owing to the inter-

\*Abstract of a paper presented before the Canadian Society of Civil Engineers, April 11, 1918.

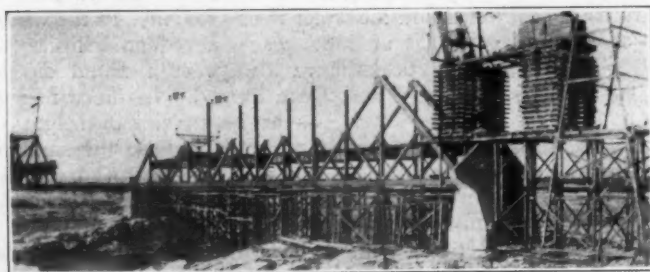
having 25-ft. panels. There are two lines of stringers, 8 ft. apart center to center; and the base of rail is 17 ft. 6 in. above the center line of the bottom chords. The structure is riveted throughout, and all bracing is rigid; it is fixed at Pier 3, and provided with expansion rollers at all other bearings. The ties are 8 in. x 12 in., 14 ft. long, spaced 12 in. center to center; they are notched  $\frac{1}{2}$  in. on the stringers, and every fourth tie is fastened thereto by a  $\frac{3}{4}$ -in. hook bolt. The outer guard timbers are 8 in. x 9 in., spaced 10 ft. 10 in. in the clear; they are notched one inch and secured



Expansion Bearings for the Abutments

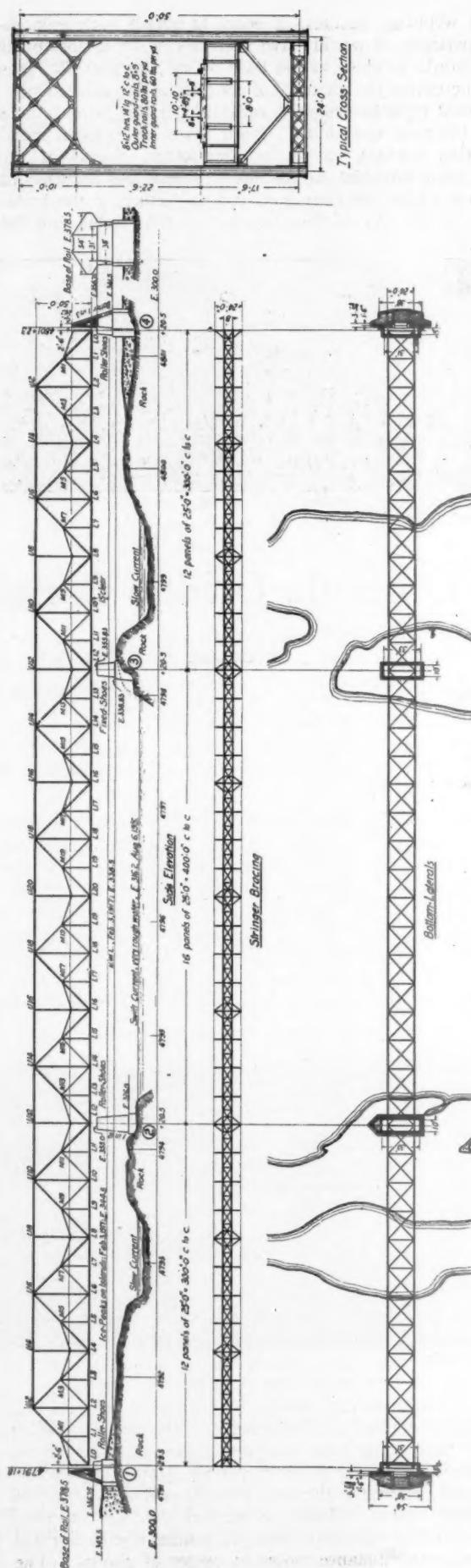
to every fourth tie by a  $\frac{3}{4}$ -in. bolt. Steel guard rails, weighing 60 lb. per yd., are provided inside of the running rails, with 8 in. clearance between heads; they are brought together in a frog beyond the ends of the bridge. The main (or running) rails are of A. S. C. E. section 80-lb. At abutment 1, where the total expansion and contraction of the bridge will be about 8 in., they are provided with specially designed expansion joints of the split switch form, with points of manganese steel. Refuge bays, for pedestrians, are provided at intervals of 200 ft.

Three types of bridges were practicable for this location; simple spans, with temporary members over the piers for



Lower Steelwork for the Northern Anchor Span Erected. The Traveler Is Raised on Blocking for Working on the Top Chords

cantilever erection of the channel span; the conventional cantilever bridge, with a central freely suspended span; and a true continuous girder bridge. The first would have been satisfactory, but not economical, owing to the great weight of extra metal required for erection stresses only. The second was rejected partly on account of the objectionable articulated joints at the ends of the suspended span, but principally because of the expensive shop and erection work in connection therewith; for an economically designed cantilever structure would have required a much greater depth over the piers, with considerably less depth at the abutments and for the suspended span, resulting in sloping chords and

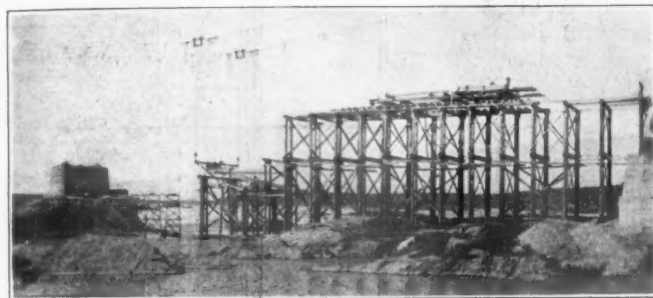


General Design of the Hudson Bay Railway Bridge, Over Kettle Rapids



irregular webbing; besides, in order to obtain such economical proportions, it would have been necessary to locate the bottom chords as close to the base of rail as possible, thus largely increasing the quantity of concrete in the substructure.

The third type, as designed and built, is the most rigid of all, and the most economical; for it required no extra metal for erection stresses, except in the bottom chords of the channel span adjacent to the piers, where the increase of section was slight; the simplicity and uniformity of the framing reduced the cost of fabrication to a minimum; and the



Falsework Under Construction for the Northern Anchor Span

continuous horizontal chords, without adjustable joints, greatly facilitated the work of erection.

#### Details of Design

The structure was designed in accordance with the General Specification for Steel Bridges, issued by the Department of Railways and Canals in 1908, except for a slight modification in the impact formula, affecting alternating stresses only, and a change in the allowable unit-stresses for compression-members. Impact has been computed by the formula,

$$I = \frac{\text{range}^2}{\text{max.}}, \text{ with the arbitrary stipulation that the range shall}$$

be taken as the arithmetical sum of the live load stress of the greater kind and 0.4 of that of the lesser. When the live load stress is of one kind only, the formula reduces to

$$I = \frac{L^2}{L + D}, \text{ in which } L = \text{live load stress and } D = \text{dead load}$$

Concerning the unit stresses for compression members, the Department's specification calls for 16,000 lb. per sq. in. reduced by Gordon's formula, using in the denominator the factor 18,000 for square ends, 12,000 for one square and one pin end, and 9,000 for pin ends. It is now quite generally recognized, however, that 16,000 lb. per sq. in. is entirely too high for short columns; and the Joint Committee on Columns and Struts in the United States, which has recently submitted its final report, recommends a maximum working unit stress of 12,000 lb. per sq. in. In this bridge, the compression members have been designed in accordance

with the formula,  $12,000 / 1 + \frac{(l/r)^2}{36,000}$ , which agrees closely

with that adopted by the Society for values of  $l/r$  up to 70, but gives somewhat higher unit stresses for greater working ratios.

The live load used in design is "Class Heavy" of the Department's specification, above noted. The bottom laterals have been proportioned on the assumption that the whole of the specified wind loads, both during erection and afterwards, would be resisted thereby; and the wind load stresses in the bottom chords include the vertical effect of the wind loads, equal to their moment about the bottom chords divided by the horizontal distance center to center of chords. The

design includes provision for cantilever erection from piers 2 and 3 to the center of the channel span.

Provision for traction and braking forces has been made by horizontal trussing attached to the top flange of the stringers and to the floor beams at points  $M_0, M_4, M_8, M_{12}$ , etc., or 100 ft. apart, as shown in the diagram; which forces are transmitted to the main girders through the inclined struts  $M_0-M_1, M_3-M_4, M_4-M_5, M_7-M_8$ , etc.

The end floorbeams are provided with stiffeners and bearing-plates at points 16 ft. apart, for jacking up the bridge; and the floorbeams at  $M_{12}$  have been specially designed for lifting the bridge, with unit stresses increased by 50 per cent and having stiffeners and bearing plates at points 14 ft. apart.

Latticing of main members has been avoided as far as practicable; but the open sides of compression chord members are double latticed with 5-in. by  $\frac{5}{8}$ -in. flats, having two rivets at ends and at intersections; tension chord members are similarly latticed with 5-in. x  $\frac{1}{2}$ -in. flats. All of the principal web members are provided with substantial longitudinal diaphragms, which are considered as part of the effective section thereof; and the heavy compression diagonals,  $U_6-L_8, U_{10}-L_{12}, L_{12}-U_{14}$  and  $L_{16}-U_{18}$ , are further stiffened by tie plates on their outstanding flanges. All joints and splices are fully riveted throughout.

Rocker bearings are provided throughout, having 8-in. bearing pins at the piers and 6-in. bearing pins at the abutments; and the shoes are steel castings. The bridge is fixed at Pier 3 and movable at Pier 2 as well as at the abutments. At Pier 2 the expansion rollers are 8 in. in diameter, and each set is provided with four 12-tooth cut pinions to prevent skewing. Substantial curtain plates are supplied for the protection of the gears and to keep out the dust; but they are removable for inspection and cleaning of the bearings. At the abutments the expansion rollers are 6 in. in diameter and similarly provided with alinement gears and curtain



Southern Anchor Span Erected, and the Beginning of Cantilever Erection Showing the Temporary Supports for Panel Points

plates. These expansion bearings are shown in one of the drawings. The fixed bearings at Pier 3 are similar to the expansion bearings at Pier 2, except for rollers and bed plates. The bridge seats are too dressed perfectly level and to the exact elevations called for on the drawings; and sheet lead,  $\frac{1}{8}$  in. thick, is provided to equalize any minor irregularities of the surfaces.

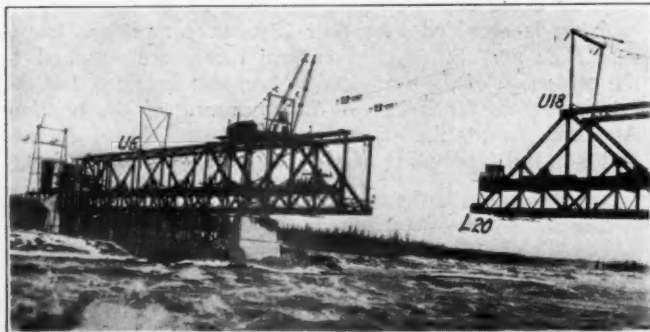
Owing to the small deflection of this bridge, which is only 3 in. at the center of the channel span, for dead load combined with the maximum effect of the live load, it was con-

sidered unnecessary to provide for a perfectly straight bottom chord under any particular condition of loading; so the trusses have been cambered, in accordance with the more usual method employed for simple spans of moderate length, by increasing the length of the top chord panels. Members U10-U12 and U12-U14 have been correspondingly shortened; and  $\frac{3}{4}$  in. has been added to the verticals U12-L12, to obviate a slight kink at panel points U12. At panel points L12 the ends of the abutting chord members have been bevelled to accommodate the form of the trusses when fully loaded. This method of cambering has greatly simplified the shop work; and the results are entirely satisfactory.

The total estimated weight of steel in the structure (including floor bolts), computed from the detail drawings before the contract had been awarded, was 4,424,000 lb.; and the actual shipping weight, as determined by the scales, was 4,415,000 lb.

### Erection

Erection was started on June 6, the earliest date possible; for, before the falsework for the southern anchor span could be placed, it was necessary to blow up huge masses of ice with dynamite. This anchor span was then erected in the usual manner by a 75-ton derrick car, having trucks 35 ft. center to center and a single 50-ft. boom. At L0, bottom chords were set 10 in. low, by omitting the upper shoe castings and using flatted pins for bearings. This was to provide



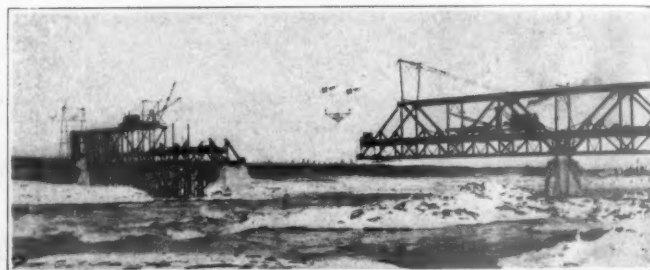
Northern Anchor Span and 100 ft. of the Adjacent Cantilever

for the deflection of the channel span during erection, and to insure that the connections at L20 could be effected before the chords at U20 would meet. After the anchor span had been fully riveted, the southern half of the channel span was erected as a cantilever by the same derrick car, the riveting following closely behind the work of erection. Panel point L14 was supported temporarily by wire cables from panel point U12 until the connection had been made at U14; likewise, panel point L18 was supported from panel point U16, until the connection had been made at U18. By August 18, or eleven weeks from the date of beginning, the first half of the bridge was fully erected; and the riveting on this portion of the structure was completed one week later.

The next, and perhaps the most difficult piece of work in connection with the entire erection, was the construction of a double cableway for transporting the materials for the northern half of the bridge to the opposite side of the river. The cables were supported on a rocker bent 40 ft. high, standing on the top chords of the southern cantilever at panel point U18, and on a timber tower 120 ft. high from the ground surface, located behind Abutment 4, with center line 60 ft. from panel point L0. The span of the cableway was 611 ft.; the sag, under maximum load, 36 ft.; and the horizontal distance of the anchorages, at both ends, from adjacent supports, 400 ft. A triangular equalizing girder, suspended at its ends from the cables and having a lifting hook

at the center, was provided for loading the cables equally. The cableway was designed for a live load of 14 tons, the weight of the heaviest piece to be transported. In addition to its principal function of transporting materials, in which service it gave entire satisfaction, the cableway was of great assistance in the erection of steelwork.

The falsework for the northern anchor span was then constructed, with extension bents reaching to the floor level, for the accommodation of the special traveler provided for the



The Cableway with Its Equalizing Girder

erection of the northern half of the bridge. As this traveler was to be used on the top chords as well as at the floor level, its four trucks (of two 24-in. double-flanged wheels each) were spaced 24 ft. center to center transversely, the same as the trusses, and 50 ft. center to center longitudinally, to coincide with the panel points; it was fitted with two 62-ft. booms and a hoisting engine; and its entire weight, including counterweight, was 60 tons, equally distributed on the four trucks. To provide for the weight of the traveler only, when moving, the top chord members were supported at their middle point by temporary timber posts, resting on special seats at panel points M3, M5, M7, M9, etc.

After the delay incident to the construction of the cableway, and the falsework for the northern anchor span, erection



Southern Half of the Bridge Erected

of steel for the northern half of the bridge commenced on September 17. Beginning at Pier 3 (with the traveler at the floor level and working toward Abutment 4) the floor system, bottom laterals and lower members of the trusses were placed, and the falsework extensions removed. The traveler was then blocked up to the height of the top chords, requiring a week for this operation; and the upper part of the steelwork for this anchor span was erected, working from Abutment 4



toward Pier 3. When the traveler had passed panel point U6, an additional rocker bent, 40 ft. high, was set up there as an intermediate support for the cables, thereby reducing the span to 400 ft., the maximum sag to 22 ft., and providing ample working clearance above the top of the steelwork. The cantilever erection of the northern half of the channel span was accomplished in the same manner as for the southern half, except that the members were placed principally by



Pier 2 Under Construction

the special traveler, which required temporary timber supports at the center of the top chord panels, already mentioned.

From the time of placing the traveler on the top chords to within two days of the end of November, when the weather suddenly turned severely cold, rapid progress had been made; and it was confidently expected that the bridge would be entirely completed before the end of the first week in December.

On December 8 the center connections at L20 had been made, and without the least difficulty; for, on meeting, the trusses had been in perfect alinement and the deflections of the cantilevered arms, exactly equal; thus it had only been necessary to jack forward on its rollers the southern half of the structure, which had purposely been set back 5 in. to facilitate the erection of the closing members. On the southern half of the bridge, the timber floor was practically complete; and the ties had been roughly distributed over the northern half, except at one panel adjacent to the center of the channel span, where the stringers had not at that date been placed; thus the structure was practically supporting its full dead load. Under



The Lower Members of the Portal Struts and Sway Bracing Were Omitted Temporarily for the Accommodation of the Derrick-Car

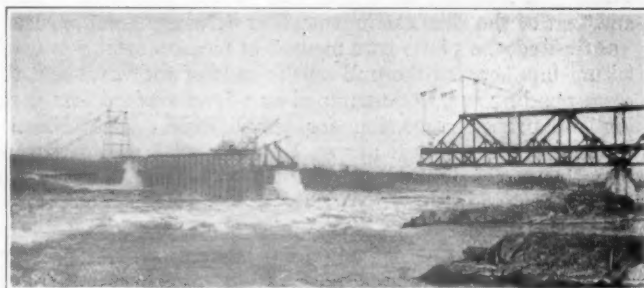
these conditions, careful levels were taken to ascertain the exact deflections of the trusses or main girders. The curves of the bottom chords were remarkably uniform; and the center ordinate was exactly the same as had been computed.

The weather having moderated slightly, although still very cold, work on the bridge was resumed December 16. On the 22d the ends were lifted  $3\frac{1}{2}$  in., which was just sufficient to bring the ends of the top chords at U20 to a firm bearing. Owing to frequent stoppages due to weather conditions, it was not until the last day of the month that the riveting of

the main members was completed, and jacking of the ends was resumed. This operation was again interrupted by New Year's day, but the ends had been raised sufficiently by January 2 to permit of placing the upper shoe-castings, without shims. Although the ends were thus  $1\frac{1}{8}$  in. below their normal position, the load at each of the four corners, as indicated by the gages on the hydraulic jacks, was exactly 118.5 tons, the amount of the computed dead-load reaction. The bridge at the time, however, was covered with many tons of ice and snow; thus it was impossible to determine very accurately the reactions for the normal dead load.

It had by this time been decided to give up the attempt to complete the bridge during the winter of 1917-18; for the men could not work to advantage; a satisfactory job could not be made of the track work; the painting could not be done until the advent of mild weather; and the bridge was perfectly safe. A final adjustment will therefore be made under more favorable conditions, when it is expected that the ends will require to be raised about another inch. With the ends  $1\frac{1}{8}$  in. low, levels were again taken on the bridge, with satisfactory results, for the camber at the center of the channel span was found to be  $1\frac{1}{8}$  in., whereas the maximum computed deflection due to the specified live-load is  $1\frac{3}{4}$  in.

The closing panel of stringers was placed January 4, which ended the work for the season. The remaining work



Beginning of Erection of the Northern Anchor Span, with the Traveler at the Floor Level

comprises a small amount of riveting for secondary parts, some minor adjustments, the completion of the timber deck, including the laying of the rails, and painting.

#### Substructure

The substructure is of concrete throughout, composed of pit gravel and cement in such proportions as were found by trial to give the best results. It had been intended to construct at least the abutment and pier on the southern side of the river during the autumn of 1916, but the track did not reach the bridge site until the end of October; cold weather set in shortly after, and there was barely time to construct the foundation for Abutment 1. Excavation for this foundation was carried to a depth of over 10 ft. through frozen clay and silt to the solid rock. The concrete was placed during the second week in December, and in very cold weather; but the materials had been heated, the mass was large, and the result was entirely satisfactory, as found from a careful inspection the following spring. The abutment was completed during the month of April, 1917.

Operations at Pier 2 were begun on April 10, and under very adverse circumstances; for the river was then at an elevation of 328.0, or 10 ft. above the average rock surface at this point; and the rock was covered with a solid mass of ice 25 ft. thick. However, it was necessary to get ahead with the work as rapidly as possible; so the ice was excavated, and the rock was bared by May 5, at which date the water had fallen to elevation 325.0. Although the ice walls of the excavated shaft appeared to be perfectly solid throughout, the water percolated through and stood at the same elevation

as that in the open river channel, but it was perfectly still, without current or surge. A timber caisson, conforming on the bottom to the irregularities of the rock surface, was then constructed; and all small openings therein were sealed by sheet piling, carefully scribed and driven so as to broom the ends. Every inch of the rock surface inside of the caisson was then picked with needle bars, to insure that it was entirely clear of ice; and heated concrete was deposited by deep-sea buckets. The rock surface at this pier had previously been carefully examined during low water, and found to be absolutely sound; thus every confidence may be placed in the foundation. The footing for this pier was completed on May 9; the construction of the main shaft thereof offered no difficulties, and was effected without incident.

The pit gravel, used throughout on this work, was invariably frozen and required to be thawed by steam; thus all of the concrete was placed warm, and with most gratifying results; for, on removal of the forms, not a single bad spot was discovered. The total quantity of concrete in the work is about 3,000 cu. yd., and of reinforcing steel in the wing walls 2,300 lb.

The laying out of the work was difficult and tedious, owing to the irregularity of the ground and to the necessity of locating Pier 3 by triangulation; but the instrument work was done with such care and precision that all important dimensions and distances were afterward found to be practically exact. In locating the center line of bed plates on Pier 2, and that of the shoe castings on Pier 3, where great accuracy was desired, the piano wire method of measurement was used, taking into account the pull on the ends of the wires and the corresponding sag, as determined on a level surface, and making the proper correction for temperature. The distance between centers of bearings on Piers 2 and 3 was afterward found to agree with the steel structure, as built within 5/16 in.

The entire work has been under the general supervision of W. A. Bowden, chief engineer, Department of Railways and Canals, Ottawa, and of J. W. Porter, chief engineer, Hudson Bay Railway, The Pas. It was designed in full by the writer, who has been retained throughout for consultation in connection therewith. The substructure was fabricated and erected by the Canadian Bridge Company, Limited, Walkerville, Ont. T. B. Campbell, bridge engineer, Hudson Bay Railway, was in charge of the bridge site; I. E. Mahon was the superintendent of erection for the bridge company; and James Carr, representative of the Canadian Inspection and Testing Laboratories, Limited, attended to the field inspection. The entire work has been carried out without loss of life or serious accident.

**LOCOMOTIVE SITUATION IN SOUTH AFRICA.**—The Minister of Railways in the South African Government, in presenting his railway budget, said that one of the greatest difficulties with which the administration had been faced was that of engine power. The maintenance of locomotives in good order was a problem that touched every country in the world. The British railways had had to send 700 engines overseas for military purposes, and they had 1,400 locomotives over the usual number awaiting repairs. The South African position had been slightly improved. There had been a considerable improvement in the water supply, and by resorting to various expedients, the Union had succeeded in keeping about 75 per cent of its engines in commission. In 1916, 26 per cent of the engines were out of repair, but in 1908 the Cape had 29 per cent of its locomotives in the shops, and Natal had 30 per cent. The greatest difficulty had been experienced in obtaining delivery of new engines. Last year 29 new standard gage engines had been placed in service, but 132 were still under order, and 28 ordered from America, were expected to be ready for shipment within a few weeks.

## Orders of Southern Regional Director

**B.** L. WINCHELL, regional director of the Southern region, has issued the following circulars, among others:

Circular Letter No. 227 states that unless and until some different policy is determined upon, there are no objections to renewal of contracts with insurance companies, whereby the latter are permitted to solicit accident and health insurance among employees, and the railroad companies undertake to collect the premiums therefor by wage deductions with consent of the employee, retaining an agreed upon per cent of the deductions for their services; such contracts being non-exclusive, and assuming that the carrier has been advised by counsel that they do not conflict with any state statute as to payment of wages to employees.

Circular Letter No. 241 states that for the present there will be no change in the manner of issuing free transportation. Federal managers will issue transportation for their respective lines just as they have in the past.

Circular Letter No. 243 states that each shop repairing foreign line locomotives will be expected to give such work the same supervision, inspection and workmanship that is given their own locomotives. Therefore the practice of sending inspectors to supervise repairs to locomotives at foreign line shops will be discontinued. It has been found to be of practically no value, and in some instances has actually resulted in delaying the repairs. When a locomotive is sent to a foreign line shop for repair the road sending the locomotive will furnish all necessary material for repairs; and will also furnish to the railroad which will make the repairs a detailed report of the work to be done, and a complete list of the material which is being furnished. The material shall in all cases be forwarded with or in advance of the locomotive. Inspectors at foreign line shops should be recalled and assigned to their regular work. The foregoing is not intended to apply to locomotives undergoing repairs at contract shops, or at the plants of locomotive builders, nor is it intended to apply to men who are specially assigned to work of collecting and forwarding necessary materials for repairs.

Circular Letter No. 244 asks the railroads to send to the office of the regional director two copies of any circulars, general letters or bulletins issued by them with respect to allowing employees to retain seniority, or providing for reinstatement of employees returning from military or naval service and in order that the matter may be handled in a uniform manner the roads are directed not to issue further circulars of this kind until the matter has been determined.

George R. Loyall, assistant to the regional director, has issued Circular Letter No. 228, calling attention to the importance of storing fuel coal during the summer months so far as practicable, in order to conserve the car supply for commercial shipments during the winter months and asking the roads to report as to what progress is being made in this direction.

In another circular Mr. Loyall submits for consideration and an expression of views, a suggestion which had been made to him, that in these days of retrenchment and economy and shortage of labor it was wasteful to keep so many red cap porters and attendants at the various passenger stations and that this character of earning a livelihood should be classed as non-essential.

Circular Letter No. 226 states that the practice which was general a number of years ago for railroads to employ men known as car tracers who went on foreign lines and looked after home equipment, is useless under present conditions. The roads are asked to advise whether they employ any men for this purpose and, if so, the number and total expense per month.



# Doings of the United States Railroad Administration

## Railroad Administration Organization Near Completion; Railway Contract Negotiations

WASHINGTON, D. C.

WITH THE SELECTION of the federal managers, which are being announced by the regional directors after a conference last week with Director General McAdoo and members of his staff at White Sulphur Springs, to be followed by the extension of the policy of decentralization by the further sub-division of the western region into three or four regions, each under a regional director, the organization of the Railroad Administration may be said to be approaching completion. Director General McAdoo is planning to spend most of the summer at White Sulphur Springs, with frequent trips to Washington, leaving the detailed management of affairs in the hands of the staff he has built up, which now reports, in his absence, to Walker D. Hines, assistant director general of railroads. In the past two months he has been at his railroad office but two or three times, when he devoted himself to passing finally on important matters that had been made ready for his decision by his assistants; and when the finishing touches have been added to the machine he is expected to devote still less of his attention to railroad affairs and more to the important questions of financial policy involved in the revenue bill and other treasury matters.

His absence from his railroad office has included about three weeks, when he was touring the country making Liberty Loan speeches and three weeks during which he was confined to his home by illness, although he handled a great deal of business during that time and came downtown occasionally for an important conference. The balance of the time he has spent at White Sulphur Springs, where he has taken a cottage for the summer and where he has an office. Mr. McAdoo is still in poor health, and even though he leaves all possible detail to subordinates he will have enough big problems to settle.

For a time the principal developments in connection with the organization were in the direction of centralization of a mass of detail at the Washington offices, but many of the reports required were considered necessary information for the formulation of general policies. Now that the policies have been further developed the tendency is toward decentralization. While the Washington organization is a large one, it is small in proportion to that of a single large railroad, and it is now in a position to devote its attention mainly to large questions of policy, leaving the details to be settled locally.

The organization now consists of federal managers in charge of the operation of each property, reporting to the regional directors, each of whom has a departmental organization of his own, while the Eastern Region has a sub-district organization. The regional directors report both to the director general on general matters and to the departmental division directors in the central organization, each of whom has a staff of assistants and some of whom have subsidiary sections. Walker D. Hines, who was first appointed assistant to the director general, has recently had his title changed to assistant director general. He now has two assistants, and has recently considerably increased his office space, which indicates that he is taking over more of the executive detail.

The appointments of federal managers that have been announced thus far by the regional directors with the approval of the director general contain few surprises and are such as would be expected from Mr. McAdoo's announcement on the subject. Where the presidents are primarily operating officers they have been chosen, and in other cases

where the presidents have been more closely identified with matters of general policy than with operation, operating vice-presidents or general managers have been selected. In the south the railroad presidents who have been left are Fairfax Harrison of the Southern and Milton H. Smith of the Louisville & Nashville. In the East the appointments already announced leave as corporate officers Samuel Rea of the Pennsylvania, Daniel Willard of the Baltimore & Ohio, F. D. Underwood of the Erie, L. F. Loree of the Delaware & Hudson and several other presidents, but they also include several presidents, while others of the presidents have been appointed regional or district managers.

The appointment of federal managers as exclusive representatives of the government in charge of operation not only removes the corporate officers from any jurisdiction over operation but, it is understood, will displace them from their offices in the railroad office buildings, except as permission to remain may be extended to them by the government officers if sufficient space is available.

### Appointments in Eastern Regional District

A. H. Smith, regional director of the eastern district, has announced a number of appointments, including district directors, federal managers and general managers.

James H. Hustis, president of the Boston & Maine and receiver in charge of the road under the United States court, was appointed district director in charge of the New England railroads with headquarters at Boston.

P. R. Todd, president of the Bangor & Aroostook, was made assistant to the district director and general manager of the Bangor & Aroostook with office at Bangor, Me.

H. A. Worcester, vice-president and general manager of the Cleveland, Cincinnati, Chicago & St. Louis, was appointed district director in charge of the railroads in the Ohio-Indiana district.

P. E. Crowley, vice-president of the New York Central, was appointed federal manager of the New York Central and Lake Erie & Pittsburgh.

A. E. Stone, vice-president of the Erie, was appointed federal manager of that road.

F. P. Gutelius, vice-president and general manager of the Delaware & Hudson, was appointed general manager of that road.

F. L. Blendinger, vice-president of the Lehigh Valley, was appointed general manager of that road.

E. D. Bronner, vice-president and general manager of the Michigan Central, was appointed federal manager of the Michigan Central and Chicago, Kalamazoo & Saginaw with office at Detroit, Mich.

F. H. Alfred, president and general manager of the Pere Marquette, was appointed federal manager of that road with office at Detroit, Mich.

A. B. Newell, president and general manager of the Toledo Terminal, was appointed general manager of that road with office at Toledo, Ohio.

H. E. Whittenberger, general manager of the Western Lines of the Grand Trunk, was appointed general manager of these lines with office at Chicago, Ill.

### NEW ENGLAND DISTRICT

B. R. Pollock, general manager of the Boston & Maine, has been appointed federal manager of that road with office at North Station, Boston, Mass.

### District Directors, Federal and General Managers



J. H. Hustis  
District Director of the New England  
Railroads



H. A. Worcester  
District Director of the Ohio-Indiana  
District



P. R. Todd  
Assistant to District Director New  
England Roads.



P. E. Crowley  
Federal Manager, New York Central



A. J. Stone  
Federal Manager of the Erie



F. L. Blendinger  
General Manager, Lehigh Valley



F. P. Gutelius  
General Manager, Delaware & Hudson



E. D. Bronner  
Federal Manager, Michigan Central



F. H. Alfred  
Federal Manager, Pere Marquette



H. E. Whittenberger  
General Manager, Grand Trunk  
Western Lines



### Federal Managers and General Managers



H. M. Biscoe  
Federal Manager, Boston & Albany



E. J. Pearson  
Federal Manager, New York, New  
Haven & Hartford



G. L. Peck  
Federal Manager, Pennsylvania Lines  
West



C. W. Galloway  
Federal Manager, Baltimore &  
Ohio Lines West



J. A. Gordon  
General Manager, Detroit,  
Toledo & Ironton



G. T. Jarvis  
General Manager, Rutland  
Railroad



E. H. Coapman  
Federal Manager, Southern  
Railway



C. M. Kittle  
Federal Manager, Illinois Central.



R. V. Taylor  
Federal Manager, Mobile & Ohio



W. A. Winburn  
Federal Manager, Central of Georgia

H. M. Biscoe, vice-president of the Boston & Albany, has been appointed federal manager of that road with office at South Station, Boston, Mass.

E. J. Pearson, president of the New York, New Haven & Hartford, has been appointed federal manager of the New York, New Haven & Hartford and Central New England with office at New Haven, Conn.

D. C. Douglass, general manager of the Maine Central, has been appointed general manager of that road with office at Portland, Me.

J. W. Wardlaw, assistant to president and purchasing agent of the Central Vermont Railway, has been appointed general manager of the same road, with office at St. Albans, Vt.

L. G. Coleman, superintendent of the Grand Trunk System, has been appointed general manager of the Grand Trunk Railway in New England, with office at Portland, Me.

G. T. Jarvis, vice-president and general manager of the Rutland Railroad, has been appointed general manager of that road, with office at Rutland, Vt.

#### OHIO-INDIANA DISTRICT

G. L. Peck, vice-president in charge of operation of the Pennsylvania Lines West, has been appointed federal manager of the Pennsylvania lines west of Erie and Pittsburgh; Cincinnati, Lebanon & Northern and Lorain, Ashland & Southern, with office at Pittsburgh, Pa.

C. W. Galloway, general manager of the Baltimore & Ohio Western Lines, has been appointed federal manager of the Baltimore & Ohio Railroad, west of Parkersburg and Pittsburgh, and Dayton & Union Railroad, with office at Cincinnati, Ohio.

E. M. Costin, general superintendent of the Cleveland, Cincinnati, Chicago & St. Louis, has been appointed federal manager of the Cleveland, Cincinnati, Chicago & St. Louis Railway, Cincinnati Northern Railroad, and Central Indiana Railway, with office at Indianapolis, Ind.

B. C. Stevenson, general traffic manager of the Toledo, St. Louis & Western Railroad, has been appointed general manager of that road, with office at Toledo, Ohio.

J. P. Main, general manager of the Detroit & Toledo Shore Line, has been appointed general manager of that road, with office at Detroit, Mich.

G. J. Derbyshire, division superintendent of the Chesapeake & Ohio Railway, has been appointed general manager of that road, with office at Peru, Indiana.

J. A. Gordon, general manager of the Detroit, Toledo & Ironton Railroad, has been appointed general manager of that road, with office at Detroit, Mich.

M. S. Connors, general manager of the Hocking Valley Railway, has been appointed general manager of that road, with office at Columbus, Ohio.

H. A. Boomer, general manager of the Lake Erie & Western Railroad, has been appointed general manager of that road, with office at Indianapolis, Ind.

#### Federal Managers for Southern Roads

B. L. Winchell, regional director of the Southern region, on June 7 announced the appointment of federal managers for most of the principal roads in the Southern region, to have jurisdiction over all departments of their respective railroads, reporting to the regional director, effective on June 8, as follows:

E. H. Coapman, vice-president in charge of operation of the Southern Railway System, was appointed federal manager of the Southern Railway System, the Georgia Southern & Florida, the Alabama & Vicksburg, the Carolina, Clinchfield & Ohio, and Carolina, Clinchfield & Ohio of South Carolina, with office at Washington, D. C.

C. M. Kittle, vice-president of the Illinois Central, was appointed federal manager of the Illinois Central, the Yazoo

& Mississippi Valley and the Gulf & Ship Island, with office at Chicago, Ill.

W. L. Mapother, first vice-president of the Louisville & Nashville, was appointed federal manager of the Louisville & Nashville and the Louisville, Henderson & St. Louis, with office at Louisville, Ky.

R. V. Taylor, vice-president and general manager of the Mobile & Ohio, was appointed federal manager of that road and the Gulf, Mobile & Northern, with office at Mobile, Ala.

W. A. Winburn, president of the Central of Georgia, was appointed federal manager of that road, with office at Savannah, Ga.

J. H. Young, president of the Norfolk Southern, and federal manager of the Virginian, was appointed federal manager of the Norfolk Southern, with office at Norfolk, Va.

#### Appointments by Western Regional Director

S. G. Strickland, general manager of the Lines East of the Chicago & North Western was appointed federal manager of that road with office at Chicago. F. Walters, general manager of the Lines West of the Chicago & North Western, was appointed general manager of the whole system with headquarters at Chicago. W. J. Towne, assistant general manager of the Lines East of the Chicago & North Western, was appointed assistant general manager of all lines with headquarters at Chicago. E. E. Nash, assistant general superintendent of the Chicago & North Western at Boone, Ia., was appointed assistant to the federal manager of that road with office at Chicago.

#### Increased Rates

The increased passenger fares went into effect on June 10 with comparatively little protest. There was one complaint because the Long Island Railroad announced its intention of applying a rate of 3 cents a mile on its Atlantic avenue division running into Brooklyn, but it was decided at Washington that this was a commutation service and that the rates could be increased only by 10 per cent.

An advance in the fares of the Hudson & Manhattan Railroad, including an increase from 5 to 10 cents in the tunnels, also brought a storm of protest, and an effort was made to have the Long Island ruling applied, but it was stated that the increase in tube fares had been personally approved by Mr. McAdoo. On Saturday, however, it was ordered that there should be no increase pending an investigation, and a similar order was made as to the fares on railroad ferry boats between New Jersey and Manhattan points.

Some complications were caused by the fact that the new tariffs covering the passenger fares were not ready until shortly before they took effect. For example, a Washington man who was going to New York on a train at 12:10 a. m. Monday, tried to buy his ticket and reserve his berth on Friday. This is an advisable and sometimes necessary precaution in these days. But he was told that the agent could not sell him a ticket for that train until midnight Sunday, and that he could not sell him a prepaid order because he did not know what the rate would be. Contemplating the difficulty of purchasing a ticket in ten minutes, the man decided to take a train leaving Sunday afternoon.

A conference of the regional passenger traffic committees has been called to meet in Chicago on June 17 with Gerrit Fort, assistant to the director of traffic in charge of passenger matters, to discuss modifications of the rates for tourist and excursion fares.

#### Division of Operation

Circular No. 32, issued by Director General McAdoo, announces that the name "Division of Transportation" is changed to "Division of Operation," and Carl R. Gray, heretofore director of the Division of Transportation, is appointed director of the Division of Operation.



### Railroad Contract Negotiations

Negotiations between the committees representing the railroads and the Railroad Administration over the standard form of contract for the compensation to be paid the railroad companies by the government are proceeding slowly with little prospect of an agreement on the terms much before July 1, when the government wishes to have the matter settled, because by that time it will have to make its decisions as to which of the short lines are to be retained under federal control or relinquished. Another conference between the committees was held on Monday and three more were to be held later in the week. The railroad committees, headed by Alfred P. Thom, counsel for the Railway Executives' Advisory Committee, is apparently proceeding in an effort to maintain the negotiations on an amicable plane, while the special committees representing the National Association of Owners of Railroad Securities have apparently delayed a settlement by a more belligerent attitude of insistence in behalf of the security owners. These committees were represented at the conference by S. Davies Warfield, president of the association, and Samuel Untermeyer, counsel, who recently gave out statements to correct an impression that a satisfactory agreement was in sight, following the meeting of railway executives in New York last week, at which the law committee made its report on the progress of the negotiations.

Both sides are reticent regarding the details of the points in controversy but it is understood that the principal points on which there has been difficulty in reaching an agreement involve the extent to which there shall be departures from the so-called "standard return," the average of the net operating income for 1915, 1916 and 1917, and the extent to which the government may control the disposition of the money paid to the railroad as compensation. The government proposes to deduct from the compensation an amount to represent expenditures for maintenance in excess of the average for the three years and also to order a railroad to make improvements at its own expense regardless of their value to the railroad after the war and the extent to which these points are to be determined by the government or by the railroad have consumed much of the time of the negotiations.

A sub-committee of the law committee of the Railway Executives' Advisory Committee, which has been handling the negotiations for the railroads, made a report to a meeting of the executives at New York on June 5 and there was a protracted discussion of the position of the railroads with reference to the contract. It is understood that the executives adopted a resolution of approval of the work of the law committee, but that a difference of opinion developed between the railway executives and representatives of the National Association of Owners of Railroad Securities, who were represented by a sub-committee and a special committee headed by S. Davies Warfield, president of the association, as chairman, and represented by Samuel Untermeyer and B. H. Inness Brown as counsel. After a meeting of the sub-committee held on the following day a statement was given out by Mr. Warfield, which gives some indication of the present status of the negotiations, which have been given little publicity, as follows:

"If the published reports of the proceedings of Wednesday's meeting of the Railway Executives' Advisory Committee called to consider the contract between the government and the railroads have given the impression that there is a satisfactory agreement in sight between the contracting parties upon the fundamental points involved, that impression should be promptly corrected in the interest of and in justice to the security holders of the roads as well as the government.

"The two committees have been constantly following the

proceedings, one the sub-committee of the National Association of Owners of Railroad Securities, the other, a special committee, representing owners of railroad securities, through meetings held in Washington and elsewhere.

"After weeks of negotiations and careful study of the agreement in its present state of negotiation, the committees have reached the conclusion that it is acceptable in many vital particulars, but are hoping that through further negotiation a document will be evolved which will reasonably protect security holders of these vast properties. We believe that the procuring of a reasonable contract in accordance with the spirit of the President's proclamation, under which these roads were taken over by the government is essential to the stabilizing of the credit situation of the country and to the winning of the war. The billions of dollars for which the government must rely largely on the millions of holders of railroad securities can best be made available to the government by a just treatment of these most important interests. It is in that spirit and with the determination that no false step shall be taken at this critical time that might impair the stability of our financial structure in its direct bearing on the winning of the war, that these committees will endeavor to procure substantial modifications in the tentative draft of contract, so far as the negotiations have progressed with the government officials. It is proper to say that in the negotiations none of the representatives of the security holders have as yet come into close contact with Director General McAdoo in the discussion of the questionable features of the contract.

"At the meeting of the railway executives yesterday the committees addressed a communication to Chairman T. DeWitt Cuyler, of that meeting. This letter contained a copy of an opinion given to the security holders' committee, by Samuel Untermeyer, of counsel, concurred in by associate counsel, in which Mr. Untermeyer takes serious exception to a number of the fundamental features of the proposed contract in its present form, which the security holders' committee unanimously endorsed. The committee's letter to Mr. Cuyler is in part as follows:

"During the earlier part of the negotiations for the contract, its formulation appeared to these committees a comparatively simple matter and they accordingly refrained from intervening, contenting themselves with keeping advised of the negotiations, but it gradually became evident that the contract was developing upon lines that involve a far-reaching departure from the spirit and principles of the President's proclamation and embodying conditions that these committees regard as imperiling the integrity of the properties and the fundamental rights of the security holders.

"When by reason of the constantly increasing demands of the government representatives, this conclusion appeared irresistible, the committee asked and received permission, through counsel, to take part in the negotiations that had been for months proceeding without their presence or participation. It was felt that the association and the special committee could no longer consistently with the purposes of their organizations, escape this responsibility in the crisis that is now confronting the security holders, especially in view of the facts (1) that the contract expressly requires ratification by the stockholders of railroads, (2) that if it is recommended for execution in its present substance of form (which to these committees is unthinkable), the values of railroad bonds and stocks will be gravely imperilled, and (3) that the officers and directors who are now acting for their respective roads were elected by the shareholders under normal conditions of private operation, to perform the current duties of management, and that no such vast power as is now proposed to be exercised by them in tentatively committing their respective companies to this contract, was contemplated. The committees respectfully insist that no

such power should be attempted to be exercised by the executives beyond a mere recommendation to the shareholders for or against the adoption of a contract.

"The views of the committees upon the leading feature of the contract in its present stage of negotiations, so far as its terms have been permitted to become known to the committees or their counsel, Samuel Untermyer and B. H. Inness Brown, are set forth in the accompanying report of counsel, which has been adopted by the committees in its entirety, and which we will ask you to be good enough to read in full at your tomorrow's meeting in conjunction with this letter.

"In our judgment, the contract should be redrafted in its main features.

"It is, however, their earnest hope and expectation that by the exercise even at this late date of a fair amount of firmness in the association and maintenance of the just rights of the security holders, a reasonable, workable agreement may yet be possible through further negotiations. Our right to be active in these proceedings has been questioned. We represent vast interests in railroad ownership. We were organized to protect that ownership. These committees shall, therefore, continue their efforts to secure a contract which will be fair alike to the owners of railroad securities and to the government. To that end, the undersigned committees will gladly co-operate with your representatives.

"We are facing the imminent peril of the destruction of great property values.

"If and when your body shall conclude upon recommending any action upon the proposed contract we hereby request (1) that action upon the proposed contract be made the subject of special meetings of directors of each railroad. (2) that copies of the proposed contract be sent to each director in advance of the meeting at which action is to be asked, (3) that action upon the contract at the stockholders' meeting be likewise made the subject of a special meeting, and (4) that the stockholders be fully advised of the terms of the proposed contract."

The sub-committee representing the railways consists of Alfred P. Thom, general counsel for the Railway Executives' Advisory Committee; A. H. Harris, vice-president of the New York Central; Burton Hanson, general counsel of the Chicago, Milwaukee & St. Paul; J. P. Blair, general counsel of the Southern Pacific; C. W. Bunn, general counsel of the Northern Pacific; F. I. Gowen, general counsel of the Pennsylvania Railroad, and S. T. Bledsoe, general counsel of the Atchison, Topeka & Santa Fe.

#### Safety Committees

C. R. Gray, director of the Division of Transportation, has issued Circular No. 5, ordering the organization of safety committees, as follows:

"In order to promote the safety of employees and travelers upon railroads, establish uniformity in the important principles of safety work, and carry out the purpose of the director general's Circular No. 7 of February 19 creating the Safety Section of the Division of Transportation, safety committees, composed of officers and employees, shall be organized on all railroads under federal control.

Each Class I railroad having more than one superintendent shall have a general or central safety committee, composed of the active heads of each department. In addition there shall be formed in each superintendent's territory, and at the principal shops and terminals, with the ranking officer as chairman, division, shop and terminal committees, which shall consist of the heads of departments and one employee representative from each class of service.

"On Class I railroads having but one superintendent it will be satisfactory to have one general committee, composed of department heads and employees representing each class

of service, and such other shop or terminal committees as are found necessary.

"Each carrier shall designate an officer or employee, who will be responsible for the safety work on his road. His name and address, together with detailed information concerning the safety organization perfected, should be furnished the manager of the safety section not later than August 1."

#### Ghost of Sherman Law Postpones Express Contract

Signature of the contract with the express companies providing for their consolidation was postponed for a time, although it was approved by Director General McAdoo over two weeks ago, because someone objected to the President about a provision in the agreement that seems to project the merger into the period after the war by providing that the express company shall conduct express business for the railroads after the termination of federal control at their request. The idea seems to be that the consolidation of competing companies during the war is all right but that the Sherman law will be in effect afterward. It is understood that the President asked that the contract be held up until this difficulty was ironed out but that it was corrected after Mr. McAdoo had had an opportunity to discuss the matter with the President on Monday. A plan has also been agreed upon which the three express companies owned by railroads will lease their property to the new express company, the rental thus received to go into their outside income.

#### Agricultural and Industrial Development Work

Industrial department work, of the kind that has resulted in the past from the competition between railroads for the location of industrial plants, is to be discontinued, according to a circular issued by B. L. Winchell, regional director for the Southern District, outlining the policy of the Railroad Administration towards the establishment of new industries and the development of natural resources. The circular says that increase in agricultural production is a very necessary effort at this time; the development of certain natural resources is also very desirable; new industries in the Southern section which will contribute to the production of essentials are very desirable and should be encouraged; but offers of rate adjustments which discriminate against similar industries already in operation in the same or other sections as an inducement to locate on a given line as against another line, and the like, should not be made. The supervision of the activities relating to the promotion of agriculture and industry, the circular directs, should be placed under the jurisdiction of the freight traffic department, because there is a certain amount of consideration or investigation which must be given by freight traffic officers to every industrial or agricultural proposition. The agricultural work, hereafter, should be directed to increase the production, better the quality, better the preparation for market, teach the use of safer containers, proper loading of cars, heavier car loading, and in other ways aid and encourage the producers.

#### Car Thieves Indicted

The Section for the Protection of Railroad Property, which is conducting a campaign to prevent pilfering from railroad freight cars, has announced the indictment by a federal grand jury at Toledo, Ohio, of 89 persons, including a yardmaster and several railroad employees, in connection with a series of systematic car robberies extending over a period of years. Arrests have also been made at other large switching centers, including Chicago, St. Louis, Pittsburgh, Detroit and Jersey City.

In order that freight cars may be utilized to the maximum by loading in one car when possible two or more shipments each subject to published minima and rates the



same as if loaded separately, the following rules governing the double and triple loading of cars have been adopted by the car service section after careful consideration; and railroads are instructed in Circular CS-12 to issue the necessary instructions in accordance therewith, effective June 1, 1918, so that instructions may be uniform on all railroads.

1. Consignments may be for the same or for separate destinations. If for two or more destinations, intervening consignments must be to agency stations directly intermediate to the final destination.

2. Each consignment must be properly marked, showing consignee and destination, and loaded in manner best calculated to facilitate the unloading of each consignment with the least possibility of confusion, error, loss or damage.

3. Bills of lading and separate way-bills must be made so as to distinguish each consignment as if loaded in a separate car. Way-bills must plainly indicate that car contains two or more separate shipments and should be plainly endorsed "car contains more than one load, stop at \_\_\_\_\_ for partial unloading."

4. No diversion or change of destination or reconsigning in transit will be allowed, except where, under published rules, it may be in the same direction and over the same route as in the initial shipments after previous shipments have been unloaded. Movement to final destination will not be considered a reconsignment.

5. Switching or lighterage charges, if any, will be assessed for delivery at each destination, according to current switching tariffs. No switching or lighterage charge will be made against shipper or consignee for return of car to carrier at one destination for its continued journey beyond. The inbound carrier will absorb such charge, if any.

6. Agent must supervise unloading and make careful check on quantity and condition of consignment for his station. He must see to it that load remaining in car is rearranged, if necessary, to protect it from damage. He must note on way-bill that part of load, for his station, has been removed. He must see that car is promptly reported for movement to next destination.

7. When shipments are for the same destination, notice of arrival and demurrage will be handled as follows:

(A) Where two or more consignments take bulk track delivery, all consignees will be promptly notified of arrival of car, that simultaneous unloading may be accomplished.

Consignees responsible for detaining car beyond free period must pay the demurrage charge. In the event that more than one consignee fails to remove contents within free period, demurrage will be collected pro rata.

(B) Where one consignee takes bulk track delivery and another private track delivery, each transaction will be independent of the other, and demurrage will be charged accordingly.

8. Double or triple loading of consignments billed "shipper's order" will not be permitted unless the name and address of the party or firm to be notified is shown on the original shipping instructions and the location of such party or firm is at the billed destination of the consignment.

The Car Service Section, in Circular No. C. S. 13, has promulgated the following rules for the guidance of all carriers in distributing open top cars:

1. Open top cars, suitable for such traffic, should be furnished preferentially for the transportation of coal, coke, ore, and raw materials used in blast furnace operation.

2. Available open top cars, not suitable for the transportation of coal, coke, ore, or raw materials used in blast furnace operation, may be furnished for the transportation of stone, sand and gravel, and when so furnished shall be used preferentially for highway maintenance materials.

3. Open top cars, suitable for the transportation of coal, coke, ore, or raw materials used in blast furnace operation and available on roads producing the same in excess of the demand of such commodities, may be furnished for the transportation of stone, sand and gravel, and when so furnished shall be used preferentially for highway maintenance materials. The return movement to mines or ovens should be utilized wherever practicable in furnishing car supply for stone, sand and gravel. Every endeavor should be made, consistent with keeping up the production of coal, coke, ore and raw materials used in blast furnace operation, to furnish shippers of stone, sand and gravel with a minimum of forty per cent of their normal weekly transportation requirements.

4. Roads which are not producers of coal, coke or ore must not use foreign open top equipment for stone, sand or gravel shipments, except for one load in the course of the return movement to mines or ovens.

5. Where the transportation needs of essential road construction or maintenance projects cannot be met by car supply furnished in accordance with the above rules, the state, county, or municipal officials in charge of the work, should, through their proper state highway department, apply to the director of the Bureau of Public Roads, United States Department of Agriculture, Washington, D. C., for assistance. Such applications will be considered by representatives of the Department of Agriculture, the War Department, the War Industries Board, the Fuel Administration and the Railroad Administration, and in accordance with the recommendations of such representatives, the Car Service Section will endeavor to furnish car supply necessary for approved essential road construction or maintenance.

"It must be understood that car supply for stone, sand and gravel must not be permitted to jeopardize the essential production of coal, coke or ore. If at any time such a result is apparent on individual roads, or generally, orders will im-

mediately issue to curtail the car supply for stone, sand and gravel."

### State Commissions Ask Suspension of Rate Order

Members of the state railroad commissions, acting through the National Association of Railway and Utilities Commissioners, have been exerting themselves strenuously to rescue the prerogatives of the state commissions from the state of oblivion which Director General McAdoo's General Order No. 28 would create as far as their control over rates is concerned. The efforts of the state commissions included a conference in Washington on June 4 and 5, attended by commissioners from 23 states, including the executive and special war committees of the association, which was described in a statement issued by C. E. Elmquist, their Washington representative, as "for the purpose of considering plans looking towards effective co-operation between the states and the federal government in the operation of the railroads," and a pilgrimage on June 6 to White Sulphur Springs for a conference with Director General McAdoo, after which they returned to Washington and discussed their troubles further with C. A. Prouty, director of the Division of Public Service and Accounting.

At the meeting at Washington resolutions were adopted covering four specific points as follows:

1. That the states should continue to exercise their lawful police powers over such subjects as spur tracks, railroad crossings, safety appliances, track connections, station facilities, and the ordinary questions which are essentially of local concern.

2. That the states continue to exercise control over local rates, either according to the laws of several states, or acting as agencies to be appointed by the director general under the provisions of section 8 of the Railroad Act; and that all intra-state rates, as well as interstate rates affecting the same, be filed with the state commissions according to law.

3. That unless the war emergency is controlling, General Order No. 28, increasing freight and passenger rates should be suspended for a reasonable time to permit readjustments to be made in relationships as well as in class and commodity rates.

4. That additional public representation should be made in the director general's official family.

At the conference at White Sulphur Springs, requested by Mr. McAdoo, these resolutions, as well as arguments and a petition were presented to him. A statement regarding the conference given out from Mr. Elmquist's office said:

"Attention was called to the fact that General Order No. 28 does not prescribe a uniform increase, that class rates are increased from 25 per cent to 350 per cent, commodity rates from 25 per cent to 300 per cent, and passenger fares from 10 per cent to 300 per cent.

"Generally speaking the commissioners are of the opinion that increased rates should be made so far as necessary to take care of the higher operating cost of the railroads during the war, but insist that this increase should be applied to the existing state and interstate rates and classifications. They argued that there is nothing in the present situation which justifies the complete emasculation of the rate schedules which are the result of years of thought and experience and emphasized the fact that the rate order will result in innumerable injustices and discriminations to shippers and communities and that irreparable injury will fall upon thousands of people and industries.

"In their opinion investigations should proceed upon two lines: First, to immediately take care of necessary rate relationships and those increases which will cause undue hardships to shippers, and also the effect of the elimination of state rates. No radical changes in rate structure should be incorporated in an order intended to meet a definite emergency. If any other changes are desirable they should be made only after careful investigation and the hearing of all interested parties. They also believe that a very complete investigation should be made by the Interstate Commerce Commission as to the reasonableness of the increased rates as provided in General Order No. 28.

"The director general gave assurance that reasonable ad-

justments especially in those cases where grievous injury would be done, might be taken care of before June 25 and that Judge Prouty was authorized to deal with those matters."

Not entirely satisfied with the newspaper accounts of the conference obtained from the state commission's side, Mr. McAdoo had an account of the meeting telegraphed from White Sulphur Springs on the following day. From this it appears that the state commissioners explained to him that they did not come to criticize or to complain but simply to seek a basis of co-operation between the state commissions and federal control of railroads. They emphasized the patriotic purpose of their visit, and assured the director general that they were ready to stand back of him to the limit and co-operate with him in every possible way to make the railroads of the country function at the highest notch of efficiency in the support of the war purpose of the nation.

The director general assured them of his appreciation of their support, and told them that he welcomed their co-operation. He expressed regret that he had not been able to confer with the state commissions before determining upon the increased railroad rates but that immediate action was vitally necessary, and months would have elapsed necessarily before each commission could have submitted its suggestions, while, in the meantime, the railroad deficit would have been steadily mounting. It was imperative for rates to be raised on account of the heavy increases in wages, in materials, in fuel, etc.

If it is found that these rates are more than sufficient to cover the necessary expenses of the railroads, then, of course, rates will be reduced. He said to the commissioners that he would be glad to consider any readjustments of rates to fit conditions as they develop. The American people, who are the consumers and must bear the increases of rates in the last analysis, the director general pointed out, are ready to make every sacrifice demanded of them to win this war.

As to the exact definition of the relationship of the state commissions to federal control, the director general stated that this was impossible to make in a general order. This relationship can only be defined as we go along. It would be an evolutionary process. The director general requested the commissioners to appoint a committee to see whether any way could be devised by which a proper synchronization of effort, a proper co-ordination of resources, could be obtained. He assured them that he would welcome such a report and would give it his most earnest consideration. But, in the meantime, the state commissions can render a very great service to the country by advising him regarding matters within their jurisdiction.

Important modifications are likely to be made in Director General McAdoo's order prescribing increases in freight rates before it becomes effective on June 25. The most important change is to be made to meet the objections of the state railroad commissions who complained, not only because their authority was completely ignored by an order to first raise state rates to the level of interstate rates in the same territory, and then to apply increases to rates thus raised, but because this plan would result in advances ranging as high as 300 per cent in some cases. After consideration of the state commissioner's protest, it has been decided to apply the percentage and specific advances directly to existing state rates and classifications, without a preliminary advance; other modifications to be made are elimination of the \$15 minimum rate per car on some commodities, the application of rate increases to purely switching movements which are not in connection with a line haul, and the application of only one increase in the case of a rate made up of the combination of two or more rates, except where the advance is a percentage; some consideration has also been given to a modification of the order eliminating export and import rates.

## Board to Adjust Controversies with Shop Employees

Director General McAdoo has issued General Order No. 29 putting into effect as of May 31 an understanding between the regional directors, representing the railways in their respective regions and the officers of the Railway Employees' Department of the American Federation of Labor, the International Association of Machinists, the International Brotherhood of Boiler Makers, Iron Shipbuilders and Helpers of America, the International Brotherhood of Blacksmiths and Helpers, the Brotherhood of Railway Carmen, the Amalgamated Sheet Metal Workers' International Alliance, and the International Brotherhood of Electrical Workers, providing for the adjustment of all controversies growing out of the interpretation or application of the provisions of wage schedules or agreements which are not promptly adjusted by the officials and employees on any of the railroads operated by the government.

The memorandum of agreement is similar to that between the regional directors and the brotherhoods of train employees, which provided for reference of controversies to Board of Adjustment No. 1.

## Classification of Budgets for Capital Expenditures

The Railroad Administration on Wednesday announced the classification of budgets of capital expenditures for all railroad and terminal companies for 1918 as approved by the Division of Capital Expenditures with some additions, bringing the previously announced total up to \$946,000,000. The classification of work is as follows:

Capital Expenditures.	Class of Work.
Widening cuts and fills, filling trestles, etc.	\$4,969,000
Ballasting	9,524,000
Rails and other track material	31,556,000
Bridges, trestles and culverts	38,035,000
Tunnel and subway improvements	2,195,000
Track elevations or depressions	6,691,000
Elimination of grade crossings	7,784,000
Grade crossings and crossing signals	640,000
Additional main tracks	47,471,000
Additional yard tracks, sidings and industry tracks	98,661,000
Changes of grade or alignment	6,363,000
Signals of interlocking plants	11,147,000
Telegraph and telephone lines	5,031,000
Roadway machinery and tools	954,000
Section houses and other roadway buildings	1,510,000
Fences and snowsheds, right-of-way snow or sand fences	817,000
Freight and passenger stations, office buildings, etc.	22,940,000
Hotels and restaurants	199,000
Fuel stations and appurtenances	6,164,000
Water stations and appurtenances	13,447,000
Shop building, engine houses	61,979,000
Shop machinery and tools	10,544,000
Electric power plants, sub-stations, transmission lines, etc.	10,771,000
Wharves and docks	3,236,000
Coal and ore wharves	7,024,000
Grain elevators and storage warehouses	2,954,000
Real estate	3,357,000
Assessments for public improvements	1,171,000
All other improvements	28,491,000
Total (excluding equipment)	\$445,639,000
Locomotives	\$199,075,000
Freight-train cars	206,994,000
Passenger-train cars	28,340,000
All other equipment	12,963,000
Improvements to existing equipment	35,043,000
Total equipment	\$482,417,000
Construction of extensions, branches and other new lines	18,237,000
Total	\$946,293,000

## Payment of Freight Charges

Director General McAdoo on Wednesday, postponed the accepted date of General Order No. 25, which provides for taking the collection of transportation charges on a cash basis, from July 1 to August 1. The rule, however, will not apply to transportation service rendered through the departments or bureaus of the United States government to the Allies, to the states, counties and municipalities, to the District of Columbia, Alaska and the American Red Cross.

On Wednesday, Director General McAdoo announced the creation of three new Regional Districts in the West. Complete details concerning these new regions and their directors and other late news of the doings of the railroad administration will be found on page 1439.



# Standardization of Indian Railways' Locomotives

Developed by British Engineering Standards Committee  
for the Secretary of State for India

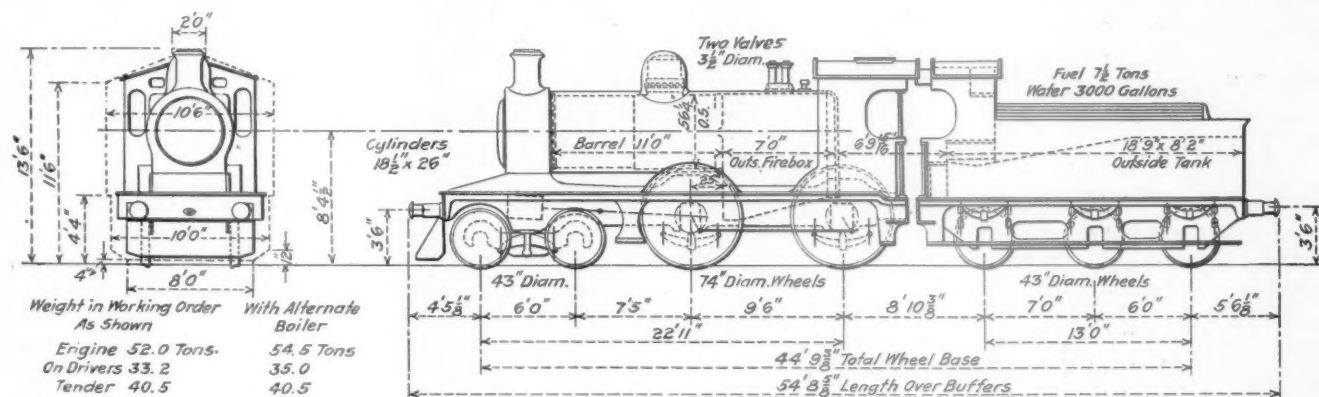
By E. C. Poultney

M. Am. Soc. M. E., A. M. Inst. Mech. E.

THE ADVANTAGES TO BE EXPECTED in establishing a standard design of locomotive may be divided under three headings. One would be first cost, as makers having once obtained all the necessary fixtures for machining the details, and the required flanging blocks and other equipment for making the boilers, would be able to manufacture at a minimum cost; in the second place, operating costs would be lower, due to less costly repair parts and owing

istration of the locomotive department is vested keep an open mind. Improvement in detail should always be kept in view and advantage taken of any real improvement when such can be suggested. If this is done, keeping in mind that modifications decided on should be such that they are applicable to as many engines as possible, standards will not be sacrificed.

The railways in India are supplied almost entirely with

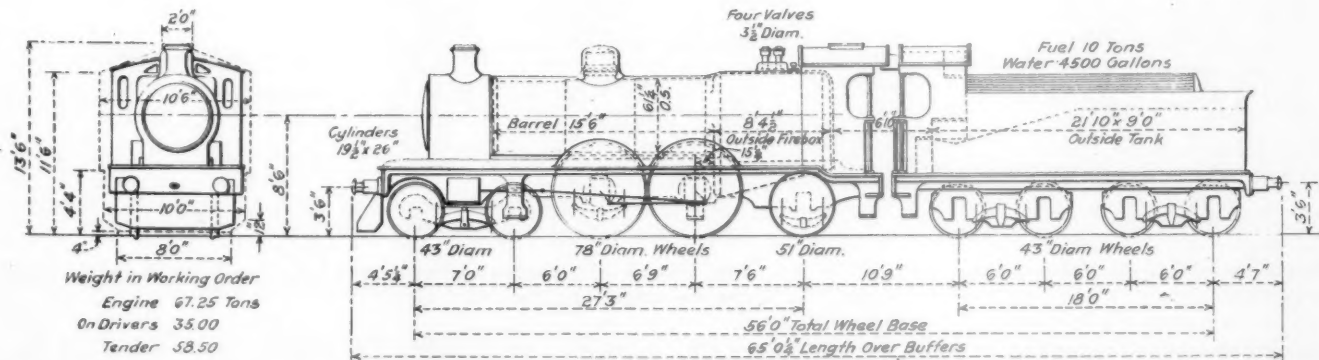


Standard 4-4-0 Type Passenger Locomotive with Alternate Boilers, 5-ft. 6-in. Gage, Tractive Effort, 19,480 lb.

to the less variety of such parts to be kept in stock, less quantities of each article would be required and the outlay in the value of repair parts would be less. From the point of view of the operating department, advantage is gained from the fact that the wheels and motion of one engine may be used for another engine should occasion arise. In this connection also the value of standard boilers for engines for both passenger and freight service cannot be over-estimated,

equipment made in Great Britain, constructed under the supervision of the consulting engineers acting for the particular railway company ordering the locomotives, and the standard engines now under review were designed at the request of the Secretary of State for India by the Engineering Standards Committee, which was inaugurated in 1901 under the auspices of the leading engineering institutions.

A conference of locomotive superintendents was held in



Standard 4-4-2 Type Passenger Locomotive, 5-ft. 6-in. Gage, Tractive Effort, 20,533 lb. Six-Wheel Tenders May Be Used as Alternate

as using the boiler of one engine to replace the boiler of another often makes it possible to get an engine out of the shops much sooner than would otherwise be possible.

To set against these advantages there is the certain fact that standardization is likely to retard progress in design and development, unless those in whose hands the admin-

Calcutta in December, 1901, at which the question of standardization was considered, and the Locomotive Committee appointed by the Engineering Standards Committee was subsequently formed, composed of members representing the following interests: Government departments, consulting engineers, locomotive builders, locomotive material manufac-

turers, British railways locomotive engineers, Calcutta Locomotive Conference. The committee meets yearly and discusses improvements in design, and the reports received from India submitted by the various locomotive superintendents.

It will be seen that the committee formed represented all the interests connected with the locomotive building industry, and might be considered well able to come to decisions on this important subject.

In general the aim of the Locomotive Standards Committee was to design locomotives, the principal features of which should be standard both in regard to design and dimensions and to the materials used in construction. The boilers and their details, wheels, tires, axles, bogies, frames and frame details, cylinders and motion are the same for each type of engine, and in many instances, such as in the case of the

Commencing in 1903, the first standard locomotives were designed, consisting of two types—one for passenger and the other for freight service, for use on the 5-ft. 6-in. gage lines, and two classes of 4-6-0 engines with six-wheeled tenders and one type of 4-8-0 engine with six-wheeled tender for use on the metre gage lines.

Considering first the broad gage engines, the passenger locomotives were of the 4-4-0 type fitted with six-wheel tenders, and the engines for goods or freight traffic were of the 0-6-0 type, also having six-wheel tenders.

Three chief features were first of all decided, namely, that the working steam pressure should be 180 lb., that inside cylinders should be employed, and that the boilers should be of the Belpaire pattern. This type of boiler was decided on for the reason as stated by the committee, that "it

TABLE I—DIMENSIONS OF 5 FT. 6 IN. GAGE STANDARD LOCOMOTIVES

Type	Cylinders	Coupled wheels, diameter	Heating surfaces, sq. ft.			Grate area, sq. ft.	Weight on coupled axles, tons	Total weight, tons
			Tubes	Firebox	Total			
4-4-0	18½ in. by 26 in.....	6 ft. 2 in.	• 1,230 • 1,453	128 150	1,358 1,603	23.3 27.0	33.2 35.0	52.0 54.5
0-6-0	18½ in. by 26 in.....	5 ft. 1½ in.	• 1,230 • 1,453	128 150	1,358 1,603	25.3 27.0	49.0 51.5	49.0 51.5
2-6-4	18½ in. by 26 in.....	5 ft. 1½ in.	• 1,230 • 1,453	128 150	1,358 1,603	25.3 27.0	45.0 46.3	76.5 79.3
Tank								
4-4-2	19½ in. by 26 in.....	6 ft. 6 in.	1,833	157	1,990	32.0	35.0	67.25
4-6-0	19 in. by 26 in.....	6 ft. 2 in.	1,833	157	1,990	32.0	50.5	69.0
2-8-0	20 in. by 26 in.....	6 ft. 8½ in.	1,914	173	2,087	32.0	63.5	71.5

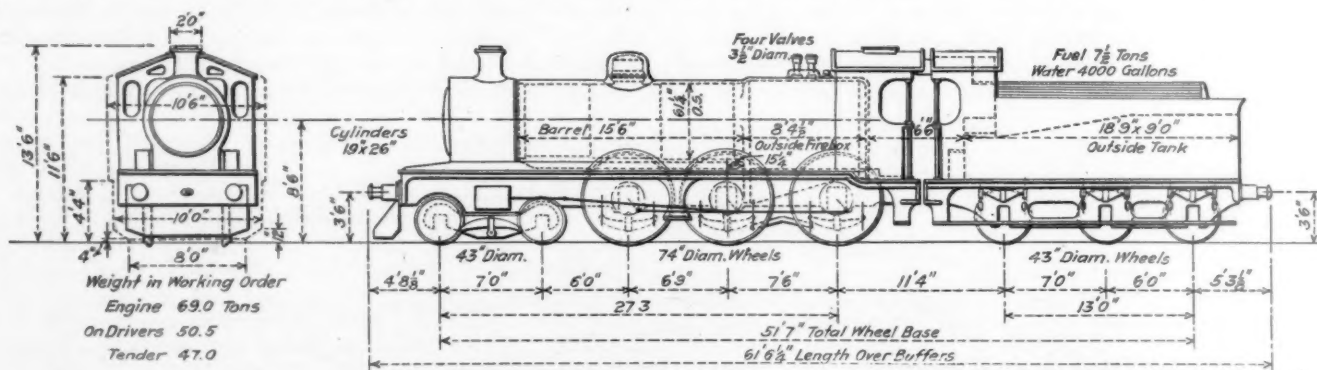
\*Alternative boiler with barrel 5 ft. 1¼ in. dia. outside smallest course, 11 ft. long. Steam pressure 180 lb. in all instances.

broad gage 4-4-0 and 0-6-0 types, the 4-4-2 and 4-6-0 types, and the metre gage 4-6-0 type engines for passenger and mixed traffic, the boilers interchange.

Owing to the different conditions met with on the various roads, certain details are left to the discretion of the locomotive superintendents of the railways concerned, such details being the design of the chimney and spark arrester device, if any be fitted, also the arrangement of the ash-pan and fire-bars and other details of a similar nature.

The materials used and the design of such parts as are intended to be retained to the specified standards are included in the comprehensive lists drawn up by the committee and known as "Instructions to Designers." These lists de-

gives more steam and water capacity than the usual arrangement with semi-circular outside shell and girder stays for the inside firebox, and with increasing pressures and larger fireboxes the length and weight of girders become excessive and direct staying has to be resorted to." The cylinders had their valve chests on the top, and Stephenson motion operated the valves through the medium of rockers. The valves were of the semi-balanced type. The coupled wheels of the passenger engine were 6 ft. 2 in. in diameter, in conformity with Indian practice at the time, so that tires of a size already in extensive use could be employed. In like manner the wheels of the freight engine were made 5 ft. 1½ in. in diameter. Details such as axles, axle boxes, horn-



Standard 4-6-0 Type Passenger Locomotive for 5-ft. 6-in. Gage Lines, Tractive Effort 23,440 Lb. The Same Boiler Is Used on 4-4-2 Type Passenger Locomotive

tail the construction desired and specify the materials. The engines are all built strictly to the specifications, and their construction and the manufacture of the material used are carried out under the supervision of the consulting engineers.

Having reviewed the various types of engines working on the Indian railways, their chief features could be noted and also those characteristics either of design or in the dimensions of the important parts, which should be modified as experience indicated. In that way a starting point was attained.

blocks, cylinders, valves and pistons, valve motion and motion details were identical in each type, and the boilers were also interchangeable. Certain details were left to the individual requirements of the railway authorities, such as the kind of springs employed; helical springs were permitted for the driving axles in lieu of the laminated springs specified.

Latitude was also allowed regarding the brake equipment used, which could consist of either a steam brake acting on the engine and tender simultaneously with the va-



vacuum brake on the train,\* or the vacuum brake apparatus could be fitted to the engines and tender and the steam gear dispensed with.

The two classes of engine had six-wheel tenders of identical dimensions, having a fuel space for  $7\frac{1}{2}$  tons of coal (16,800 lb.) and a water capacity of 3,000 Imperial gallons.

All the engines were required to have boilers with not less than 2,000 sq. ft. of heating surface, a grate area of not less than 30 sq. ft. and a steam pressure of 180 lb. per sq. in.

In addition, another goods engine was designed similar to the one just mentioned, but having coupled wheels  $56\frac{1}{2}$  in. diameter, it being noted that there were in service many en-

TABLE II—DIMENSIONS OF METRE GAGE ENGINES

Type	Cylinders	Driving wheel, diameter	Heating surfaces, sq. ft.			Grate area, sq. ft.	Weight on coupled axles, tons	Total weight, tons
			Tubes	Firebox	Total			
4-6-0	15½ in. by 22 in.....	4 ft. 9 in.	954	108	1,062	16	34.3	57.8
4-6-0	15 in. by 22 in.....	4 ft. 0 in.	954	108	1,062	16	26.4	34.0
4-8-0	16 in. by 22 in.....	3 ft. 7 in.	1,166	126	1,292	17.5	32.5	40.5
2-6-2 (Tank)	15 in. by 22 in.....	3 ft. 7 in.	1,031	100	1,131	13.4	28.5	43.7

The tender engines have six-wheel tenders, all same weight and design, having a capacity of 2,000 Imperial gallons of water and space for 4 tons of coal.

The tank engine carries 800 gallons of water and 1.5 tons of coal.

Cylinders are all outside, and Walschaert valve motion is used in all cases.

Steam pressure—180 lb. in each case.

Coming to the metre gage engines, the first standard engines were classified as follows:

- (1) A passenger engine of the 4-6-0 type, with a six-wheel tender.
- (2) A mixed traffic engine of the 4-6-0 type, with a six-wheel tender.
- (3) A heavy goods engine of the 4-8-0 type, also with a six-wheel tender.

All the engines have outside cylinders with Walschaert

gines having the same approximate wheel dimensions. The smaller wheels enabled the fixed wheelbase to be reduced from 17 ft. to 16 ft. Engines of this type have been supplied in considerable numbers, and those having the smaller wheel have been adopted as the standard.

The Belpaire type of boiler is used on all these engines,

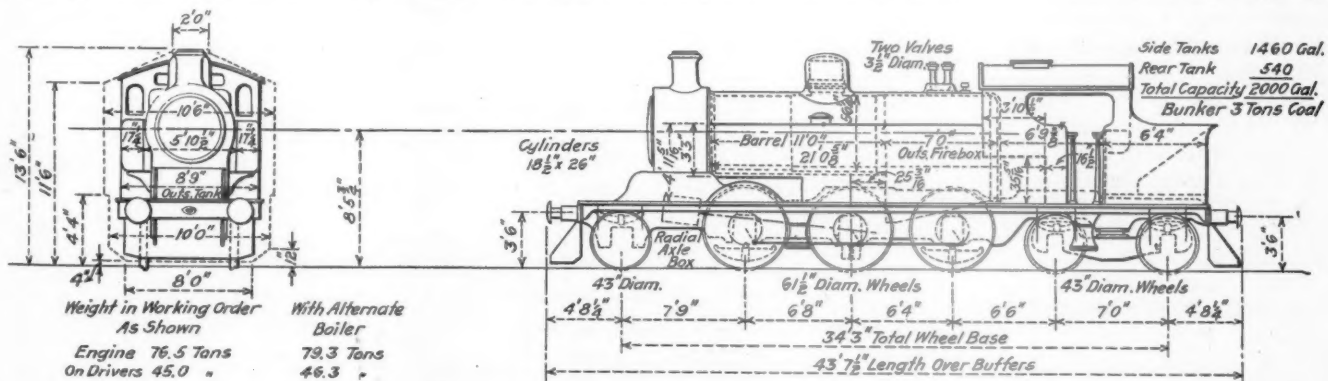
TABLE III—DIMENSIONS OF SUPERHEATED 5 FT. 6 IN. AND METRE GAGE ENGINES

Type	Cylinders	Driving wheel, diameter	Heating surfaces, sq. ft.			Grate area, sq. ft.	Weight on coupled axles, tons	Total weight, tons
			Tubes	Firebox	Super.			
4-4-0	20 in. by 26 in.....	6 ft. 2 in.	958.77	128	218.4	25.3	33.7	43.15
0-6-0	20 in. by 26 in.....	5 ft. 1½ in.	958.77	128	218.4	25.3	49.6	49.6
4-6-0	16½ in. by 22 in.....	4 ft. 9 in.	710.61	108	194.6	16.0	26.97	35.30

The 5 ft. 6 in. gage engines work at 180 lb. steam pressure. The metre gage engines work at 160 lb. steam pressure.

valve motion. The framing is inside the wheels and not outside as had been previously much used on the narrow gage engines in India, it being pointed out that the inside location of the framing obviated the use of fly cranks and only restricted the width of the firebox very slightly. Belpaire type boilers, similar in design to those used on the wide

and all have outside cylinders. The position of the valve chests and type of valve gear used are optional, but most of the recent engines constructed have Walschaert motion with the valves on the top of the cylinders.† The motion, axles, axle boxes, engine trucks and the details of the framing are the same in both the 4-6-0 and 4-4-2 type engines,



Standard 2-6-4 Type Tank Locomotive for 5-ft. 6-in. Gage Lines, Tractive Effort 23,440 Lb. Boilers Are Same as Those Used on 4-4-0 Type Passenger and 0-6-0 Type Freight Engines

gage engines are used, and the steam pressure is the same, namely, 180 lb.

The next engines to be considered are those dealt with in the second report issued in 1907. These engines were all designed for heavy main line service and called for:

- (1) An engine of the 4-4-2 type, having coupled wheels 78 in. diameter, with an axle load of 17 to  $17\frac{1}{2}$  tons (38,000 lb. to 39,200 lb.).
- (2) An engine of the 4-6-0 type with coupled wheels 74 in. diameter, with axle loads of 16 tons (35,840 lb.).
- (3) An engine for goods traffic of the 2-8-0 type, having coupled wheels  $61\frac{1}{2}$  in. diameter, with axle loads of 16 tons (35,840 lb.).

\*The vacuum brake is the standard continuous brake used in India, all passenger stock being so fitted and also a large percentage of the goods wagons.

and as far as possible parts of the 2-8-0 engines are the same as similar parts of the 4-6-0 and 4-4-2 engines.

Each of the four different classes of engines mentioned may have three different sizes of tender, as follows:

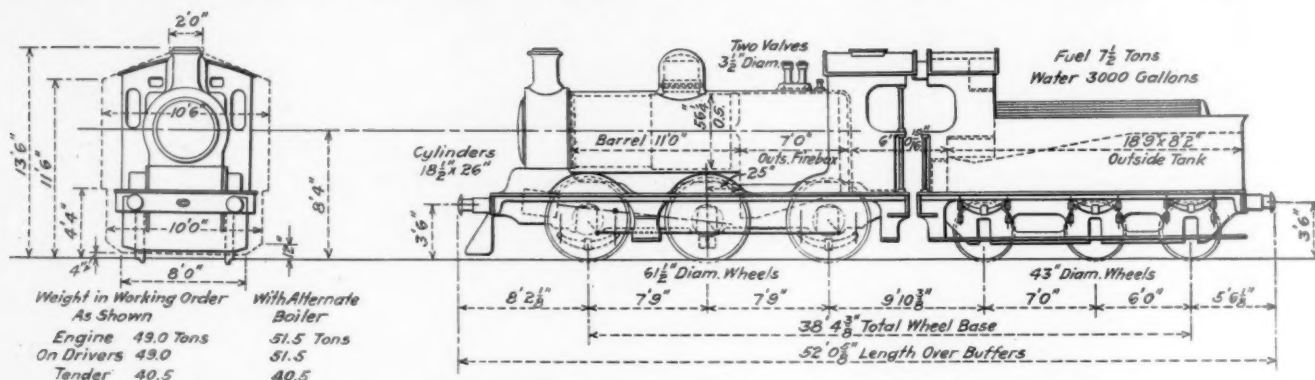
- (1) A light six-wheel tender similar to those used with the 4-4-0 and 0-6-0 type engines designed for the 5 ft. 6 in. gage lines in 1903, having a water capacity of 3,000 Imperial gallons, and fuel space for  $7\frac{1}{2}$  tons (of 2,240 lb.) of coal. Weight, loaded, 40.5 tons.
- (2) An intermediate type of tender also running on six wheels, having a capacity of 4,000 gal. of water and  $7\frac{1}{2}$  tons of coal. Weight, loaded, 47 tons.

†Originally the 4-6-0 and 2-8-0 engines had 20-in. and 21-in. cylinders, respectively, but acting on advices received from India, subsequent engines supplied have 19-in. and 20-in. cylinders.

(3) A large double bogie eight-wheel tender, with space for 4,500 gal. of water and 10 tons of coal. Weight loaded, 58.5 tons.

The second report, besides the engines mentioned, described a side tank engine for local service, having the 2-6-4 wheel arrangement. In general, these engines follow closely

the one previously specified, when desired. The total heating surface was thereby increased from 1,358 sq. ft. to 1,603 sq. ft. and the grate area from 25.3 to 27.0 sq. ft. The weight of the 4-4-0 engine was increased from 52 tons to 54.5 tons and that of the 0-6-0 engine from 49 to 51.5

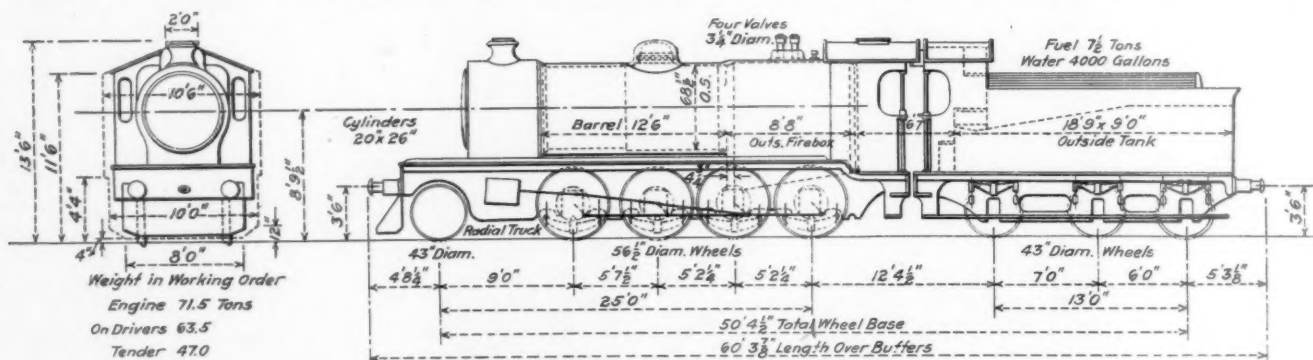


Standard 0-6-0 Freight Locomotive, 5-ft. 6-in. Gage, Tractive Effort, 23,440 Lb.

the 0-6-0 type goods engines, the cylinders, wheels and motion being identical.

These engines are allowed to have two different sizes of boiler:† (1) the standard boiler as fitted to the 0-6-0 goods

tons. More recently the engines of this type have been fitted with the larger type of boiler and have fire tube superheaters of the Schmidt type. The larger engines mentioned have also been superheated, and on this subject the Railways

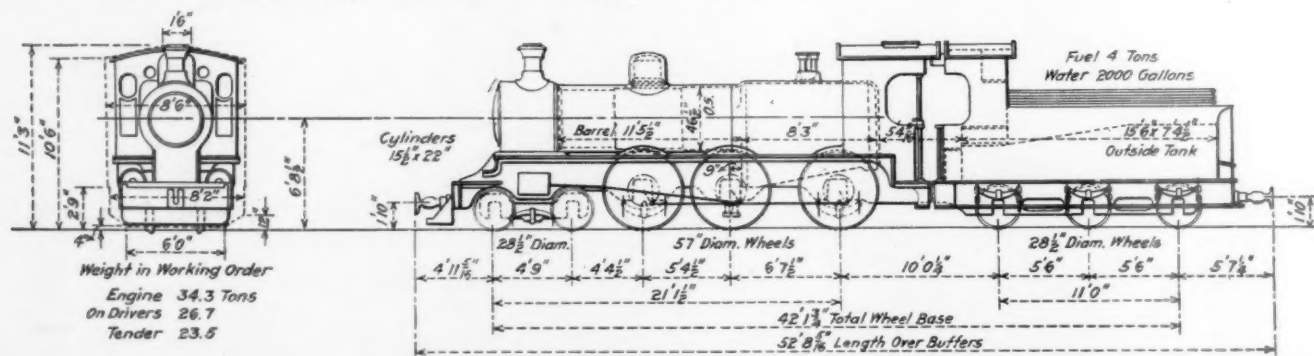


Standard 2-8-0 Type Freight Locomotive for 5-ft. 6-in. Gage Lines, Tractive Effort, 29,819 Lb.

engines, and (2) a larger boiler, 5 ft 1 1/4 in. outside diameter at the largest course of the barrel.

Experience with the 4-4-0 and 0-6-0 type 5 ft. 6 in. gage engines showed that it might be advantageous to increase

in India Administration Report of 1915 states that "superheated engines fully justify the decision come to by many railway administrations, that all engines for main line work should be fitted with superheaters."



Standard 4-6-0 Type Passenger Locomotive for Meter Gage Lines, Tractive Effort, 15,022 Lb. A Similar Locomotive with Drivers 48 in. in Diameter and 16,706 Lb. Tractive Effort Is Used in Freight Service

the boiler capacity, and in 1910 a standard boiler 5 ft. 1 1/4 in. diameter was designed to be used as an alternative to

As will have been noticed, the first standard engines for the 5-ft. 6-in. gage lines had inside cylinders, while later, when the Ten-wheel heavy type engines were introduced, outside cylinders were adopted. This is explained by the fact that when the first engines were designed it was desired

†The larger boiler was designed in 1910 as an alternative for the 4-4-0 and 0-6-0 engines, and was subsequently adopted as an alternative boiler for the 2-6-4 tank engines.

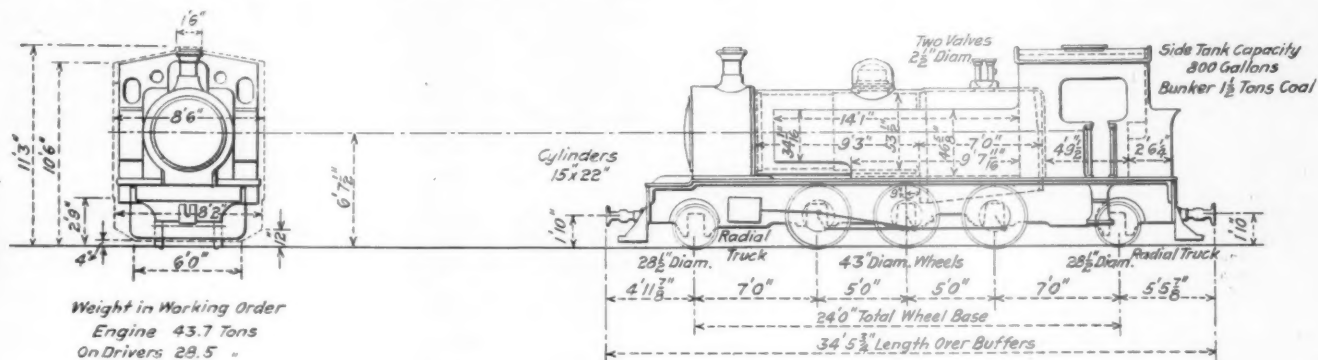


to make them approximate as closely as possible to existing engines of the same type already in service, which had inside cylinders. The new engines were designed on the same general lines, opportunity being taken to improve the details of construction and bring them into line with the best practice obtaining at that time. On the other hand, when the Ten-wheel engines were designed, they represented a new departure in Indian locomotive practice and were designed to follow closely successful Ten-wheel engines of similar dimensions then operating in England, which engines had outside cylinders.

In construction the engines and tenders are all made from materials which comply with the requirements of the British

duced in diameter for a short length at the firebox end, and swelled for a short distance at the smokebox end. The domes are all built up, the section next the boiler being short in length, thus bringing the joint low down, an arrangement which facilitates the examination and repair of the "regulator" or throttle valve.

The framing is all of open hearth steel, the frame braces and motion plates being steel castings. The axle box guides are also steel castings and have adjusting wedges placed in front. Engine axle boxes are made of either bronze with white metal bearings, or are either steel castings, steel forgings or wrought iron, in which cases they are fitted with bronze crown bearings, white metal. Motion details are



Standard 2-6-2 Type Tank Locomotive for Meter Gage Lines, Tractive Effort, 18,648 Lb.

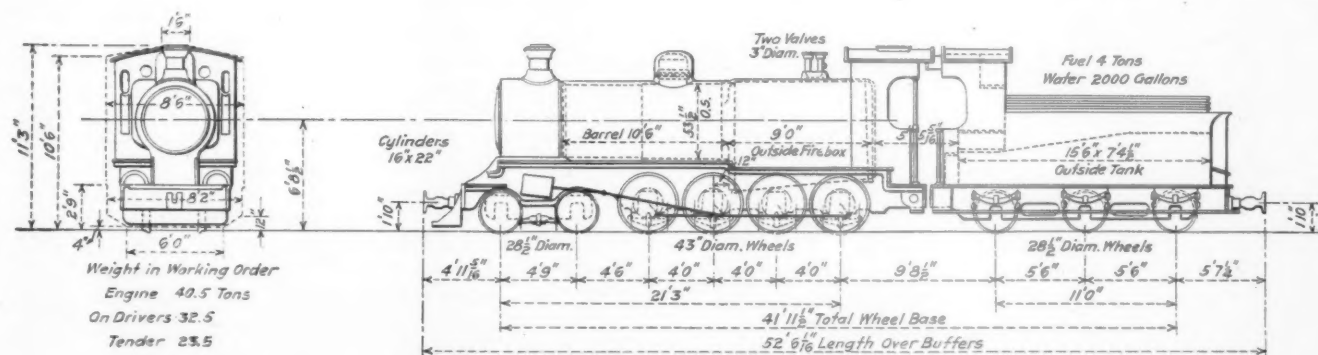
Standard Specification, wherever specifications have been drawn up to cover the particular requirement, and where such standard specifications do not exist the Indian State Railways Specifications, introduced by the late Sir A. M. Rendel, are used.

Generally, steel is used in preference to iron, and steel details are made without weld and all steel used is required to be made by the open hearth process. Exception to the above is to be found in the construction of the foundation, or mud rings and in the draw gear, which details are made of iron in all instances. The steel employed in the construction of the boilers, is all made by the open hearth acid

made of steel, those parts which are case hardened being lower in tensile strength than those not so treated. Coupling rods and connecting rods are milled out to an I-section.

Inside cylinder engines have four-bar guides, outside cylinder engines have two-bar guides and the guide bars on the metre gage engines are of the Laird type. Cylinders are, as usual, iron castings, as are also the pistons. The slide valves are of bronze.

The tenders for both the 5-ft. 6-in. and metre gage lines have outside framing, and the wheels and axles are of the same material as those used on the engines. Axle boxes and their guides are of cast iron. Bearings are of gun metal



Standard 4-8-0 Type Freight Locomotive for Meter Gage Lines, Tractive Effort, 21,218 Lb.

process. All the holes are drilled and steel rivets are used, all riveting being done by hydraulic pressure. Internal fireboxes are of copper with either copper or bronze stays in the water spaces. Copper rivets are used for the inside firebox and the riveting is specified to be done by hand. All boiler barrels are telescopic, the smallest course being next the smoke-box. Direct stays are used to support the crown sheet and those adjacent to the tube sheet are arranged to allow for upward expansion of the firebox. Tubes are either of brass or solid drawn steel. When brass tubes are used they are ferruled at the firebox end. In all cases tubes are re-

white-metalled. The centre axle of six-wheel tenders is permitted a certain amount of lateral motion by allowing side-play between the axle boxes and guides. In all instances a hand brake is fitted, acting on the tender wheels only. The tenders also have a cab made to correspond to that on the engine, and constructed and arranged in a similar manner. The materials employed in the construction of the engines and tenders comply with the requirements set out in Table IV.

The tables of dimensions give the principal particulars of the different locomotives which have been mentioned. All

weights are expressed in the English ton of 2,240 lb., and water capacities mentioned are all Imperial gallons.

In respect to results obtained in service, these engines seem to have met with a measure of success. In some instances, however, the large engines have been found to be rather heavy for the track. On the other hand, the 4-4-0 type passenger and the 0-6-0 type goods engines in general have been quite successful.

TABLE IV—BRITISH STANDARD SPECIFICATIONS

	Ultimate tensile strength, tons per sq. in.	Elong. per cent
Crank axles .....	30	25 min.
Crank axles (oil toughened) .....	35	20 min.
Straight axles (yield point 50 per cent of ultimate) .....	35-40	25-20 min.
Tires .....	56-62	10-8 min.
Steel forgings (case hardened) .....	27 max.	25 min.
Other steel forgings for boiler, etc. ....	25-32	27-20 min.
Connecting rods, straps, bolts, coupling rods, crossheads, crank pins, eccentric cranks, etc. ....	32-27	25-20 min.
Slide bars, piston rods, cotters for crossheads, etc.; axle box guide wedges, gudgeon pins, reversing screws, etc. ....	40-45	20-15 min.
Boiler plates, sections and bars .....	26-32	22 min.
Plates $\frac{3}{4}$ in. thick and over, sections and bars $\frac{5}{16}$ in. and over, except for boilers .....	28-32	20 min.
Rivets (bars) .....	26-30	16 min. for plates under $\frac{3}{4}$ in.
Steel casting wearing surfaces .....	35 min.	25 min.
Steel casting (wheels) .....	26 min.	10 min.
Copper firebox plates .....	14 min.	15 min.
Copper rods for stays .....	14 min.	40 min.

NOTE—Test pieces used are to British standard sizes, having cross section areas proportional to the length on which the elongation is measured.

## Orders of Western Regional Director

**R.** H. AISHTON, regional director of western railroads, Chicago, has issued the following circulars during the last week:

In Supplement No. 2 to Circular No. 50, dated June 4, it was ordered that all lettered signs on the rear of passenger trains be discontinued.

Circular 121, dated June 6, orders that no contracts for repair of cars be placed at outside shops without first securing the approval of the regional director. The Car Repair Section is making an extensive inquiry and will be prepared to undertake necessary car repair work which cannot be done in the railroads' own shops.

In a communication to western railroads on June 4, the regional director announces that railroads which have subscribed in the past to publications for the benefit of employees may continue in the same general policy but shall not radically increase or decrease number of subscriptions.

Supplement No. 4 to Circular No. 65, dated June 6, states that, until otherwise ordered, contributions in reasonable amounts by railroads to Railroad Y. M. C. A.'s are authorized by the railroad administration.

Circular 119, dated June 6, announces that no posters soliciting labor for private industries shall be placed in railroad stations, except when expressly authorized by a proper officer of the railroad company with the distinct understanding that he has authority of the railroad administration.

In a letter dated June 4, the regional director announces that the household goods of an employee of a government-controlled railroad may be transported free of charge over any railroad under federal control in case of his transfer from one place to another. Cartage to and from stations will not be allowed.

Circular No. 123, dated June 6, reads: Where witnesses or others are summoned to Washington by either of the railroad boards of adjustment, round trip transportation shall be furnished by the line on which the individual is employed. Notice from either of the boards requiring the attendance shall be considered sufficient authority for issuance of trans-

portation and it shall be promptly issued and the notice filed with the pass records at office of issuance.

In a letter to western roads, dated June 6, the regional director directs that no sale of locomotives or cars be made without authority from his office. Lines having equipment for sale or wishing to lease or buy equipment will report such wants so that it may be determined if a transfer can be made between lines within the regional territory.

## Cost of Second Hand Rail to Industries

In Supplement No. 1 to Circular No. 56, dated June 8, the regional director announces that until further notice the price for second-hand rail will be from \$55 to \$65 per gross ton, depending upon quality and location, f. o. b. carrier's tracks nearest to delivery point. In general, he says, the price per gross ton for good quality of second hand rail for sidings and spur tracks should be \$60 east, and \$65 west, of the Rocky mountains, except that light inferior rail may be sold for \$55 to \$60 per gross ton. Authority must be requested from his office in each instance for the sale of rail.

## War Department Needs Transits

In a letter to western railroads, dated June 7, Mr. Aishton calls attention to the fact that the engineer corps of the war department is in the most urgent need of a large number of high grade transits with full verticle circle, erect image, and complete with tripods, similar to C. L. Berger & Sons' No. 4½ mountain and mining transit, Buff & Buff Mfg. Co.'s No. 3-C transit, and W. & L. E. Gurley's No. 27-A transit. According to S. M. Felton, director-general of military railroads, manufacturers in this country are unable to furnish the present and urgent need of transits required by engineer troops now in France. It is necessary therefore to secure from other sources all the high grade transits not in urgent use to secure the number needed. Western lines are asked to report in detail the number and quality of transits that can be spared, together with a statement of their physical condition and their price.

## Orders for Southern Pine

In supplement No. 1 of Circular R. P. C. 8, dated June 8, the Western regional purchasing committee announces the creation of a government bureau for the handling of orders of yellow pine lumber. Purchasing agents of railroads will place orders for lumber directly with the manufacturers as previously, but they are not authorized to pay above government prices except in cases of extreme emergency. If purchasing agents are unable to secure lumber directly from the producers they are instructed to advise the regional purchasing committee of their needs; and that body will handle their orders through the director of lumber of the new government bureau mentioned above. On account of the varied methods of describing lumber the regional purchasing committee will soon send to western railroads a form showing lumber lists and prices in usual railroad grades and in such a manner that requisitions can properly be checked back with them and needless confusion can be avoided.

The regional purchasing committee also asks the railroads to notify it of old orders which have been unfilled so that it can take steps to secure action upon them. In this connection the committee points out that there is at present a lull in the demand for the immediate shipment of yellow pine, and therefore an opportunity for the railroads to secure proper attention to their orders. Western railroads are asked to notify the committee if any bridges are badly in need of repairs or if equipment is held up on account of the lack of lumber, as such information can be used to advantage in insisting on delivery.

## Conservation of Tin

In Circular R. P. C. 14, dated June 8, the regional purchasing committee calls attention to the scarcity of tin and



the necessity for conserving it to the fullest extent. The letter shows how less tin can be satisfactorily used in babbitt and solder for railroad uses. The regional purchasing committee asks western railroads to observe the strictest economy in the use of tin and to report any experiments that may further conservation.

#### Interplant Switching

In a communication to western railroads on June 4, the regional director asks for detailed information on interplant switching, giving the names of the industries served, the nature of the switching done, the number of engine hours consumed per day, the charges exacted, whether the charges are established by tariff or whether the railroad is compensated in some other manner through a switching contract; the extent of weighing and reweighing of cars, the movement of cars from one point to another in the plant to finish loading or unloading, the spotting of empties for interplant loading and the movement of loaded cars to the point of

unloading, and whether it is practicable for the industry to provide its own service.

Circular No. 118, dated June 1, says: It is the desire of the railroad administration that reasonable rules be adopted governing the settlement of claims growing out of the transportation of grain, fruit and vegetables, livestock, fresh meats and packing house products, and coal, coke and ore, and that uniformity of action in this matter between the several railroads be established.

For the purpose of formulating rules to be adopted by the interested railroads, subject to approval of the federal administration, I have appointed a committee of freight and general claim agents, composed as follows: M. E. McKirahan, F. C. A., S. P. Co.; H. C. Pribble, G. C. A., A., T. & S. F.; J. B. Shields, F. C. A., C., B. & Q.; W. O. Bunker, G. S. F. C., C., R. I. & P.; Charles Dietrich, F. C. A., C., M. & St. P.; W. F. Every, G. C. A., N. P.; T. S. Walton, G. C. A.; M. P.; E. C. Howe, F. C. A., C. & N. W.; and W. H. Hancock, F. C. A., U. P.

## The Reasons for Steam Railroad Electrification

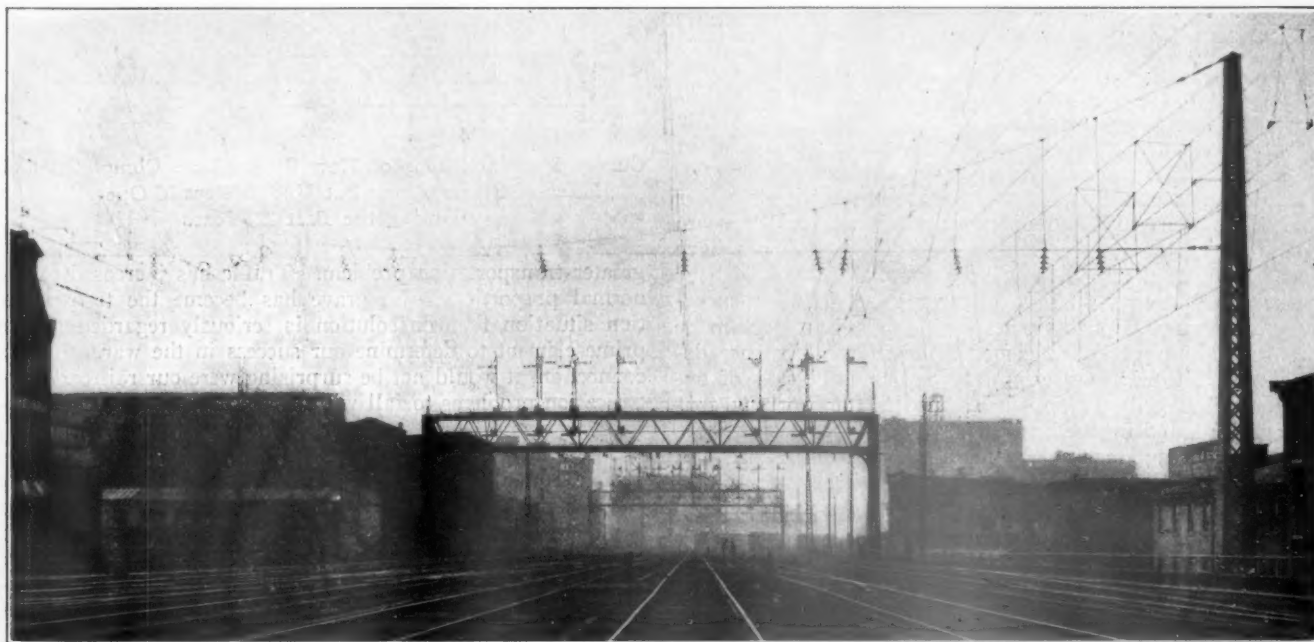
The Density of Traffic Has Increased Greatly, Even Under Normal or Pre-War Conditions

By Q. W. Hershey\*

THE PERIOD FROM 1895 TO 1902 covers the most rapid expansion of American railroad building. A record of consecutive annual increases in miles of track constructed was made during this time. The rate of construction reached a maximum during the year 1902, when 6,026 miles of new line were laid. From the record of this

the average miles laid each year was approximately 1,000. Most significant, also, is the fact that during the year 1917 there were more miles of track abandoned than built.

The expansion during the period 1895-1902 represented the necessity of meeting the country's development of new territory. Following this period, beginning about 1905, the



Pennsylvania Railroad Just Outside of Broad Street Terminal

maximum year there has been a gradual average decline in building new lines until it reached the low maximum of 933 miles in 1915. From this date, 1915, to the close of 1917

\*Heavy Traction-Railway Department, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

problem has been one of expansion to take care of the increasing traffic of existing communities, rather than that of supplying transportation facilities to new communities. In this the problem became one of developing greater operating facilities, such as heavier motive power and intensifying traf-

fic movements through high tonnage, faster speeds, greater trainloads, heavier carloading, etc., all contributing to the expansion of facilities for increased transportation. It was a problem of caring for increasing transportation densities.

About 1903 the electrical art had developed satisfactory locomotives which were efficient and of considerable capacity, and because they were clean and practically noiseless their adoption in certain terminal and tunnel districts was compelled through legislation. For these same reasons, and the showing of reliability which was soon demonstrated, they were voluntarily adopted for numerous main line operations.

It is a striking commentary on the material fitness of electrified operation that we find the electrical installation being turned to in order to supply the method of meeting the requirements of intensified operation. As mileage extension development of the railroads decreased, the application of electrified operation was increased to meet the rising problems of dense traffic. From the start, the application has been continuous and increasing in capacity of equipment and the amount of mileage electrified, until today electrified installations make use of the very heaviest high-speed, heavy-tonnage equipment in the world, and the extent of trackage under electric operation measures a number of thousand miles. All electrifications naturally occupy points in the transportation systems where the density of traffic is very much greater, and the operating requirements more difficult than that of the average mileage.

The following roads now have electrified operations on sections of their main line, or more important auxiliary lines: Baltimore & Ohio; Boston & Maine; Butte, Anaconda & Pacific; Chicago, Milwaukee & St. Paul; Erie; Grand Trunk; Great Northern; Michigan Central; New York Central; New York, New Haven & Hartford; Norfolk & Western; Pennsylvania and Southern Pacific.

The unquestioned reliability of this form of motive power has been proved in the severest service.

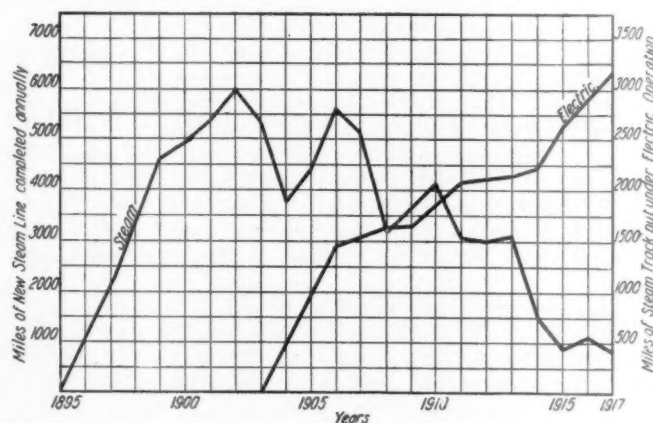
A virtually new system of economies becomes the basis of the factors involved in the operation of the newer systems of motive power under electrification. It has been amply demonstrated that one electric locomotive will, ordinarily, do three times as much service as can be done by a steam locomotive. Schedules are speeded up materially. Track transportation capacity is increased, in certain instances, by 100 per cent. The difficulty of mountain grades is virtually overcome. Where formerly it was necessary to maintain three locomotives, now there is but one, and at a lower cost. "Inspection" becomes one of the more important items rather than the "overhaul" item of expense. Where under steam operation, 30 to 40 per cent only of the total hours have been spent on the road, now 90 per cent of each 24-hour period may be given in service on the road. Under emergency requirements, much greater engine mileage may be made between "shippings." Efficiency of engine performance decreases very slowly over extended continuous periods of operation. Track destruction is lessened, better working conditions are found for the health and comfort of the employees, this improvement making for more efficient man-effort, and greater safety therefrom in the operation of the trains. Regenerative braking adds an additional train safety factor and tends considerably to lower the wear and tear on all equipment. There is an expansion of facilities arising from the release of much equipment and labor, through the elimination of hauling of non-revenue producing coal. Greater daily mileage is obtained from freight cars. There is a toning up of the whole operation where the burden of inefficiency imposed through the use of the steam engine is removed, by substituting the electric engine in which the engineman's part is power control, rather than power creation. Lengths of engine runs are materially increased with a consequent elimination of intermediate terminals and repair shops. There is secured a material advantage in the haulage effect

through being freed from the conditions set by the physical limitations of the steam locomotive. Capacity limitations in the electric locomotive are elastic—severe cold weather conditions actually increase its capacity.

In general, the maintenance of high operating efficiency is less complex, and an effort toward continued improvement of this efficiency may be more effectually exerted through concentration at fewer points.

Electric operation secures a marked conservation of natural resources. One pound of coal, or equivalent oil, fuel fed into the power house, may be transmitted and transformed to more effective power at the drawbar than is possible with the steam locomotive. There can be conserved the labor and equipment necessary for transporting coal from the mine to the railroad by the substitution of electrical transmission. Not only is there a great part of the fuel saved through the efficiency of the newer method of utilizing the latent energy of the fuel, but by electrified operation a new scheme of economics is brought into action through the ability to turn to efficient use the great volume of heretofore unreclaimed and unharnessed water power, with a consequent conservation of primal resources. Our ideals of proper stewardship will have been approximated when the raw materials in the great storehouse of natural resources will have been accredited proper value, and whose worth will not be measured entirely by the cost of their present utilization and destruction.

Never in history has our country been confronted with a



Curves Showing Miles of New Steam Line Completed and Miles of Steam Track Put Under Electric Operation During the Past 22 Years

greater transportation problem. Traffic has increased to abnormal proportions. So grave has become the transportation situation that its solution is seriously regarded as the prime element to determine our success in the war. In this connection, it would not be surprising were our railroad electrification problems to fall within the category of other problems legislated as war measures.

There must be safety in railroad operation as nearly perfect as human skill can produce. There must be reliability and non-interruption of service, as perfect as can be secured by the use of the highest class of equipment which has been adequately proved in actual service. Under the immediate war prohibitions and restrictions, the public will uncompromisingly forego luxurious comfort, but when normal times again prevail there will be demanded an improved order of elegance of appointments and means of comfort. What with its peculiar fitness, the additional safety it brings, its record of reliability established, the comfort it dispenses, the high order of efficiency it institutes, the integrity of the trust to future generations which it binds for us in the conservation of primal resources, together with its well founded economies of operation and capacity expansion, all spell electrification.



# Mechanical Devices for Disbursement Accounting

## Comprehensive Report of the Committee on Disbursement Accounts of the Railway Accounting Officers

THE FOLLOWING is the complete report of the committee on disbursement accounts, A. P. Disbrow (Erie) chairman, of the Railway Accounting Officers' Association presented at the annual meeting held in St. Louis on May 29-30, 1918, and reported in last week's *Railway Age*, page 1389.

### Use of Mechanical Devices in Disbursement Accounting

The special committee of five, appointed by the president to prepare recommendations as to how accounting officers may best meet the conditions confronting them with respect to clerical labor and the compilation of accounting and statistical data, particularly with respect to the use of mechanical devices as a means of solving the shortage in experienced clerical labor, in its report dated December 20, 1917, suggested "that each of the Standing Committees make a supplemental report to those already existing in the proceedings of the Association of American Railway Accounting Officers on June 26 and 27, 1912, at Quebec, with regard to the use of mechanical devices."

The subjoined information—regarding the use of mechanical devices in disbursement accounting work—is the result of data obtained by your committee from fifty-three roads.

On request, the secretary of the association will furnish the name of each road indicating that it was using any particular device. This will permit direct inquiry by accounting officers interested in installing similar devices or methods.

In this report, names of devices have been omitted, except in cases where a clear description could not be given without indicating the name of the device.

**Non-listing Computing Machines.**—Operated by hand pressure on keys, the figures being recorded on dials when keys are depressed. Machines used for multiplication, addition, subtraction and division. Best results are obtained by assigning permanent female operators and training them to operate by touch system.

Making and verifying extensions and footings on vouchers, bills, payrolls and statements.

Prorating common operating expenses between operating divisions, accounting districts, States and classes of service.

Compiling gross ton miles in division accounting offices from wheel reports.

Arriving at totals of paychecks and drafts.

Totaling requisitions and invoices as a check against adding machine tapes, when list is necessary, to avoid calling items back against tape.

Cross footing and balancing monthly statistical sheets to arrive at total for year, avoiding necessity of drawing items off on a work sheet.

Compiling "Employees and their Compensation" statement by classes of employees for Interstate Commerce Commission annual report. Twelve-column machine used, permitting drawing off hours and compensation at same time.

**Charts Used in Connection with Non-listing Computing Machines.**—Pay roll table, decimal equivalent of days for 24 to 31 day month.

Rate per minute for each hourly rate.

Reciprocal table where constant divisor is used.

Discount table, showing net of \$1.00 after discounts are taken off.

Table of values of freight cars and yearly and monthly depreciated value of \$1.00 at 5 and 6 per cent. Used in ascertaining value to bill for on cars destroyed on foreign lines.

**Central Bureau Non-listing Machines.**—Non-listing machine work centralized in one department in which none but women operators are employed. Practically all computing machine work for entire Disbursement office done in this central bureau. Permits training operators on all classes of work and reduces waste time to a minimum.

**Training Operators for Non-listing Computing Machines.**—Central computing machine bureau equipped with a number of listing adding machines. Girls, with no previous experience, started on listing machines and after having become proficient are rotated between the listing and non-listing machines; that is, listing machine operator will spend one week at the listing machine and the next week at the non-listing.

Due to difficulty in securing operators, a student course was established. Girls from 16 to 19 years of age with good fundamental education employed and allowed ten dollars a month while learning, which is not considered as a salary, but merely as lunch money and car fare. As students develop, allowance is increased until they are rated as regular salaried operators. Plan is beneficial to carrier as well as to employee by providing some compensation while learning instead of being obliged to pay a tuition fee.

**Adding and Listing Machines.**—Operated by depressing keys and pulling a handle or pressing a bar, if motor driven. Records the figures on paper tape or sheets of paper and is used when necessary to have a permanent record of items.

Listing open items in proving balances in ledger accounts (reconcilements). Avoids drawing off on work sheets and footing work sheets. By using wide machine, voucher bill, paycheck, etc., numbers and amounts can be drawn off at same time.

Compile car repair bills. Use specially designed machine, which gives a greater output per day than typewriter, but has disadvantage in not being adaptable to other than straight routine billing.

Purchase invoices posted daily on voucher form in duplicate, the duplicate serving as a voucher ledger. At same time an accumulated total is arrived at to balance against Division Accountants' and Storekeepers' weekly statements of material.

Listing material requisitions by classes, accounts and Accounting Divisions for charge and credit and for statistical purposes.

Listing pay checks, time checks, vouchers, etc.

Prepare pay and time voucher registers.

Post individual equipment cards showing original cost, changes in value, etc.

**Adding and Listing Machine, with Shuttle Carriage.**—Registering, indexing and abstract work.

**Machines Especially Adapted for Multiplication and Division.**—Operated by placing levers, representing multiplicand or dividend, in position and turning a crank required number of times, according to numbers in each unit in multiplier or divisor, shifting carriage for each unit. Cannot be used to advantage for addition, but is valuable and a time-saver in arriving at percentages for apportionment of operating expenses and in prorating expenses between States, divisions, etc. Non-listing, both product or quotient and multiplier or divisor being recorded on dials. (Brunsviga and Marchant).

Non-listing and operated in same manner as above and for same purposes, except that numbered keys are used instead of levers for multiplicand or dividend. Can be used for addition, but not with any degree of speed (Monroe.)

Non-listing motor driven, operated by depressing keys for

multiplicand, multiplier, dividend and divisor, results recorded on dials. Carriage is automatically shifted for each unit. Can be used with a fair degree of speed for addition, used to best advantage in arriving at percentages and in prorating expenses. (Ensign.)

Non-listing, motor or crank driven. Operated by setting markers for divisor, dividend, multiplier or multiplicand and turning crank or, if motor driven, pressing bar. Requires but one operation for each unit. Cannot be used to advantage for both rotary and longitudinal movement and arriving at percentages. Figures recorded in dials. (Millionaire.)

*Operators for Multiplying and Dividing Machines.*—Require no previous experience and can be successfully operated by girls.

*Non-listing Adding Machine.*—Operated by setting keys and pulling lever. Inexpensive machine used for general purposes and shifted from desk to desk as needs require. Operated by inexperienced clerks. Non-listing and used for addition only, figures being recorded in dials.

*Cylindrical Slide Rule.*—Consists of a cylindrical slide having both rotary and longitudinal movement within an open frame-work of equi-distant bars. Slide contains two logarithmic scales, one on each side of center. On bars are two other scales arranged in same manner as on the slide.

Used principally for proving averages in statistics and arriving at and verifying percentages and pro-rating revenues and expenses by States, divisions, etc., and in apportioning charges for locomotive repairs to classes of service. Does same class of work as multiplying and dividing machines with greater speed, but results are not so accurate beyond four figures.

*Typewriters.*—For correspondence, statement work and general use. For statement work equipped with tabulators.

Posting index of audited vouchers and bills in loose leaf records. (Rapid fire index.)

Car repair bills and voucher checks made with one writing by means of carbon. Original being voucher check and carbon serving as original bill. Same method in effect in purchasing department to cover purchases of material and supplies.

Equipped with two kinds of type, one plain and one pinpoint for drawing drafts and vouchers. Name and address is written using plain type, amount is written using pinpoint type to guard against manipulation. Combines typewriter with check protector.

*Typewriter With Adding Machine Attachment.*—For statement, bookkeeping and other general work where necessary to foot typed figures. Does away with separate operation of footing completed statement after typing.

Transcribing and adding record of bills and vouchers.

Posting bills collectible in loose leaf ledger (Rapid fire index) from bill register, also posting cash and balancing individuals and companies bills collectible ledger for miscellaneous bills, car repair bills and foreign roads overcharge bills.

Prepare car repair bills.

Writing and balancing pay rolls and pay roll registers.

Writing pay rolls and pay checks and totaling pay rolls in one operation. Time books and time sheets audited before pay rolls are written. One line protected check used.

List vouchers to treasurer and prepare voucher register in one operation.

*Combined Typewriter and Computing Machine.*—(Moon-Hopkins.) An electrically operated combined typewriter and computing machine with four accumulators, adds, subtracts, multiplies and divides and is especially adapted to bookkeeping, statement work and the rendering of bills.

Specially built machine for use in compiling information in connection with U. S. war tax.

Compiling by lines, record of gross earnings, passengers

carried and miles run by each car in various lines and balancing daily with receiving cashier's record.

Compile car repair bills, claim greater output per day obtained than by use of typewriter with adding machine attachment.

*Typewriter—Flat Writing.*—Machines used where statement or record sheets are too large for ordinary wide carriage machine, where inadvisable or impossible to roll sheets through machine, or where posting to bound books.

Posting ledger charges to primary road and equipment accounts by authorities for expenditures from tabulating machine-punched cards.

Statement and abstract work.

Freight claim draft sheets.

*Typewriter Cyclometer.*—Attached to typewriter to record output and determine efficiency of individual operators. Records number of key and space bar strokes.

*Line-a-Time.*—Attached to desk of typist directly behind typewriter and facing operator. Equipped with a lever operated guide for following the line, eliminating the necessity of using a ruler or other flat instrument to follow line and guard against errors when transcribing.

*Electric Sorting and Tabulating Machines and Card-Punching Machines.*—Operated by punching specially printed cards, figures being used to indicate information. Cards are sorted mechanically and run through tabulator to obtain totals. A number of totals may be obtained in one operation. Operated successfully by assigned women operators.

Condensing charges to operating, road and equipment and other accounts from departmental distributions of labor, material, supplies, fuel and stationery and distribution from bills, vouchers and journal entries.

Condensing revenue by accounts and by states and classes of service.

Condensing charges to operating accounts by operating divisions, accounting districts, states and class of service for statistical purposes.

Condensing charges to Road and Equipment accounts by A. F. E.'s for preparation of statement of charges by authorities and for posting by machine in ledger as a basis for check of completion reports required under Federal Valuation, order No. 3.

Condensing wage statistics for annual reports to Interstate commerce and state railroad commissions.

Compiling basic statistics covering train, locomotive and gross ton miles, special statements of train tonnage performance, tonnage and fuel performance by individual enginemen and classes of engines.

Equipment record statistics.

Assemble by classes of traffic and states, loss and damage and overcharge claim payments and analyze personal injury accounts.

Individual yard operation reports.

Assemble time of enginemen and trainmen and prepare pay rolls, also compile wage statistics for this class of employees.

Prepare mechanical department pay rolls and distribute the charges. Compile statistics showing cost of repairing individual parts of individual locomotives. Abstracting of distribution by states and divisions; and for Interstate Commerce Commission accounting requirements. (Central Bureau.)

Comparative analysis of overcharge and loss and damage claims paid, divided to show commodities and classes or causes.

Comparative statement of labor or pay roll cost by departments.

Statement of material purchases during month.

*Phonographs, Dictating, Transcribing and Cylinder Shaving Machines.*—For general correspondence purposes. Letters dictated into machine and recorded on wax cylinders. Cylinder given to operator, who transcribes, using a machine



equipped with transcribing diaphragm. Eliminates time lost by stenographer when taking dictation direct from correspondent.

After having transcribed letter, cylinder is shaved and used over again.

**Central Bureau for Transcribing.**—All transcribing done in central bureau. Cylinders are collected at stated periods and delivered to transcribing department.

Letters transcribed on piece work basis at a fixed price per letter. Telegrams and mailgrams dictated on separate cylinders to permit preferred attention and expedite transcription.

**Mimeograph Duplicator.**—For obtaining a number of copies of circulars, statements, etc., by means of stencils cut on typewriter.

**Dermatype Stencils.**—Used when an unusually large number of copies are required. Stencils can be cleaned and filed away and additional copies may be struck off when desired.

**Cutting Stencils.**—Carbon copy made at time stencil is cut to facilitate comparison with original draft.

**Gelatine Duplicator.**—For preparing a small number of copies of circulars, statements, etc. Statement or circular to be duplicated is prepared either by hand or on typewriter with specially prepared ink or ribbon and applied to gelatine surface. Copies are then obtained by applying blank sheets to impression left by original or master sheet. Duplicating surface comes in rolls and after one surface has been used a new one may be obtained by turning a handle.

**Clay Duplicator.**—Clay composition contained in a tray. Can obtain from 5 to 50 copies. Copies obtained in same manner as on Gelatine duplicator.

**Multigraph.**—For getting out printed matter. Requires setting of type.

**Photography.**—Reproducing camera for obtaining photographic reproductions of statistical sheets, vouchers, bills, waybills, etc. Will permit of reduction in size at time of reproduction.

**Addressing Machines (Motor Driven).**—For rapid addressing of envelopes, printing names on time slips, time rolls, etc.

Preparing time slips, time rolls, pay rolls and inserting names on pay checks.

Addressing envelopes.

**Rapid Mail Opener.**—For opening incoming mail.

**Numbering Machines.**—For numbering consecutively drafts, vouchers, bills, etc.

**Combination Dating and Numbering Machine.**—Dating and numbering consecutively, vouchers in one operation.

**Clock Time Daters.**—For stamping date and time received on correspondence, statements, etc.

**Radial Distributor.**—A fan-shaped device with receptacles into which papers are dropped when sorting either in alphabetical or numerical order.

**Signagraph.**—Used largely by paymasters for signing pay checks. Device permits signing a number of checks at one operation.

**Check Protectors.**—For inserting amounts on pay checks, drafts and vouchers to guard against manipulation.

**Cancelling Machines.**—Motor-driven for cancelling, by small perforations, paid pay checks, drafts, vouchers, voucher attachments, etc. Dies can be set to show date of payment.

Hand-operated, cuts a round or square hole.

**Air Tubes.**—For transmitting telegrams by means of carriers through tubes to and from telegraph office, also for sending special letters (relayed through telegraph office) to other offices in building.

**Automatic Electric Elevator.**—For transmitting mail, vouchers and other items between offices of the accounting department and between offices of the accounting department and the treasury department. Operated by pressing a button. Car is controlled from and may be stopped at any floor.

**Electric Mail Elevator.**—Operated between central mail room and all floors in general office building. Used for delivering large quantities of mail to and from mail room. Car is controlled from mail room.

**Mail Chute.**—Leading to central mail room. Letter drop on each floor and small quantities of outgoing mail are sent to mail room through chute.

**Applying United States Stamps.**—Stamps applied on outgoing United States mail for entire general office in central mail room by means of machines. Each office encloses its own mail, using a special envelope for United States mail.

Machines used for sealing letters and applying stamps to outgoing mail. Capacity from 6,000 to 9,000 envelopes per hour.

Electric sealing wax pot.

Postal scales for weighing mail.

**Pencil Sharpeners.**—Placed at convenient points in office.

**Spool-o-Wire Paper Fastener.**—For fastening papers together. Makes staples from length of wire wound on cylinder inside machine.

Automatic feed paper fastener for files containing few sheets. Makes long narrow clip. (Hotchkiss.)

**Rubber Stamps.**—Rubber stamps are very generally used to save time of writing. Principal uses: Addressing envelopes in advance of use when addressing machine is not available, stamping date received on inbound mail, reports, vouchers, etc., captions of accounts frequently used, instructions as to prorating on sheets sent to computing machines.

**Time Clock Recorders.**—For recording on cards time of arrival and departure of clerks employed in office.

For obtaining record of time work was started and completed in connection with output of non-listing machines and determining efficiency of individual operators.

**Trucks.**—Used to collect books, pay rolls, vouchers, etc., requiring vault protection at close of day. Truck boy makes round of departments, avoiding necessity of clerks from each department making trip. Books distributed by truck boy each morning.

**Paper Punch.**—Hand power, adjustable, for perforating papers for filing purposes.

**Binders.**—For binding pay rolls, vouchers, etc., using heavy, hinged cardboard binding sides. Holes for binding purposes cut in records by drills, either hand or motor driven.

**Buzzers and Call Bells.**—Very generally used for calling clerks and department heads to office or desk of auditor, assistant auditor and chief clerk.

**Intercommunicating Telephone System.**—Connecting chief and head clerks' desks with auditor and with each other. Operates independently of main telephone exchange, but connected with it for outside calls.

Dictagraph interconversing system, master station in comptroller's office to the several branches of the accounting department and in the individual office, the auditor of disbursements with his assistant, the chief and various head clerks.

Each bureau head equipped with a telephone permitting connection with any other department in general office building or outside. Supplemented by an automatic intercommunicating system permitting communication direct between auditor of expenditures and each bureau head or bureau heads with each other. Permits calling each individually or collectively.

**Mail Carriers.**—Used in transmitting mail between disbursement office and offices of division storekeepers and division master mechanics. Mail is placed flat in carrier without enclosing in envelopes. Carrier is made of heavy cardboard covered with canvas and has a double flap, on one of which is printed Disbursement Office address, and on other address of storekeeper or master mechanic.

**Payroll Cases.**—Locked boxes with reversible cover on which addresses are painted, used for transmitting pay and

time rolls between maker of roll and disbursement office.

*Visible Card Index File.*—Used to post time of transportation department employees. Posted daily to cards, name of employee in plain sight at all times. (Can be adapted to other card systems such as employees' rate cards, contract and lease cards, etc.)

*Wage Tables.*—Hourly, daily and monthly rates, for computing earnings of employees and for verifying extensions of rates on payrolls.

Train and enginemen's rate sheet. Earnings computed from 1 to 100 minutes for each train, engine and yard rate. Used in figuring overtime.

Hourly rates for each monthly rate for a 24 to 31 day month. Used for computing overtime earned by trainmen who are paid at a monthly rate.

Time after which overtime accrues on train runs 100 to 199 miles in length on speed basis of  $12\frac{1}{2}$  miles per hour.

Chart showing number of trips made in passenger and way freight service in 28, 30 and 31 day month and earnings per full month for each number of train crew. Used largely to determine earnings when less than full month is worked on monthly paid runs.

*Calculating Tables.*—For rapid computation of mileage, per cents, etc., principally used in application of fuel prices, applying rates to number of tons of coal issued during the month to arrive at value chargeable to expenses by lines and states.

Lumber calculator. For computing and verifying board measure.

Freight tax computer. Showing amounts to be collected under the war revenue tax for transportation of shipments.

Charts used in connection with statistics showing amounts chargeable through construction and for record of A. F. E.'s. 12-year graphic chart.

1-year statistical chart.

For computation of rail tonnage showing tonnage of rail from 1 to 100 feet on rail ranging from 56 pounds to 90 pounds per yard.

*Numbers Assigned to Indicate Class of Service.*—Voucher, pay roll, etc., charges assigned to service, i. e., freight, passenger, common, etc., class of service being indicated by a number following the account number. Charges to account 201, for example, are shown 2011-2012-2013, last figure indicating class of service.

*Numbers Assigned to Regular Train Runs.*—To avoid writing points between which trains run, on time rolls, a number is assigned to regular scheduled runs and number only is shown on roll.

*Numbering Bills and Vouchers.*—Series started first of each year and vouchers numbered consecutively, beginning with Number 1. Allowance made each month for overlapping numbers. Prevents misfiling and reduces work of filing to a minimum.

Series started first of each month and vouchers numbered consecutively, beginning with number one. The month and year are indicated as such.

Consecutive numbers started first of each year, odd numbers used for January and even numbers for February, etc. Prefix number used to indicate year.

*Bills and Vouchers.*—Material and supplies and car repair bills and vouchers prepared by shop accountant. Before transmitting to auditor, items are listed on loose leaf bill and voucher register sheets which accompany bills and vouchers to auditor and form part of auditor's record, requiring no further writing. Bill and voucher numbers assigned to shop accountant by auditor who uses same numbers as his own. Car repair bills not sent to auditor, but forwarded direct to foreign lines by shop accountant, list only being sent to auditor.

*Preparation of Pay Rolls.*—Time posted to time sheet by

foremen in transportation department, all details being shown. Extensions made on time rolls and pay rolls compiled from time rolls, no details of time, rate, etc., being shown on pay rolls. Time and pay rolls sent to auditor's office for verification.

Same method for train and engine rolls.

*Semi-Monthly Pay Rolls.*—Duplex form used, names of employees being entered on pay roll once a month. Amount earned in second period entered on carbon copy of first period roll.

*Station Expense Roll.*—To reduce number of vouchers in connection with public utility companies' bills, such as light, water, etc., and to insure quick payment in order to obtain discount, agents are authorized to pay bills as presented and list them on an expense roll which is forwarded to auditor. Auditor issues non-negotiable draft to agent for total amount of payments, agent remits as cash to clear his accounts. Same method is applied to other authorized station expenses.

*Employees' Expense Accounts.*—To expedite payment of amount due employees for money expended in company service and reduce number of vouchers. Expense accounts, for all men under his jurisdiction, are sent to department head direct and recapped on a special form in triplicate. One voucher drawn in favor of treasurer for total of all expense accounts. Copy of recap and original expense account statements sent to disbursement officer; original and duplicate of recap sent to treasurer, who issues checks for amount due each employee.

Payment of expense accounts made by check. Checks drawn by department heads and forwarded, together with expense statements, to auditor, who, after audit, forwards checks to payee. Treasurer relieved by blanket voucher drawn by each department head.

*Quick Payment Ticket.*—For immediate daily payment of laborers, especially large bodies of men employed temporarily for special purposes. Ticket is issued to men when they start work, and timekeeper indicates by a special die punch work done, total hours worked and rate paid. Ticket cashed upon presentation to paymaster, amount earned being entered on ticket by paymaster's clerks.

*Rail and Ties in Transit.*—Cards are prepared, one set for forwarded and another set for received rail and ties. The two sets are matched and unmatched cards represent in-transit items which are followed up.

*Skeletonized Blanks.*—Bills collectible, vouchers and department bills and invoices covering regularly recurring items, are skeletonized on duplicating machine, leaving blank spaces for date, amount, percentages, etc., and a year supply struck off. Produces standard results, reduces possibility of error and avoids considerable work of preparing pencil drafts and checking and rechecking data monthly.

*Form Letters.*—Standard printed forms with numbered questions and answers. Used to avoid writing letters. Clerk inserts name and address and pencil checks proper item. Used largely in bill and voucher departments.

Mimeographed standard letter forms. Used to avoid dictating letters. Special blank is prepared by correspondent as instructions to typist indicating form to use and data to insert.

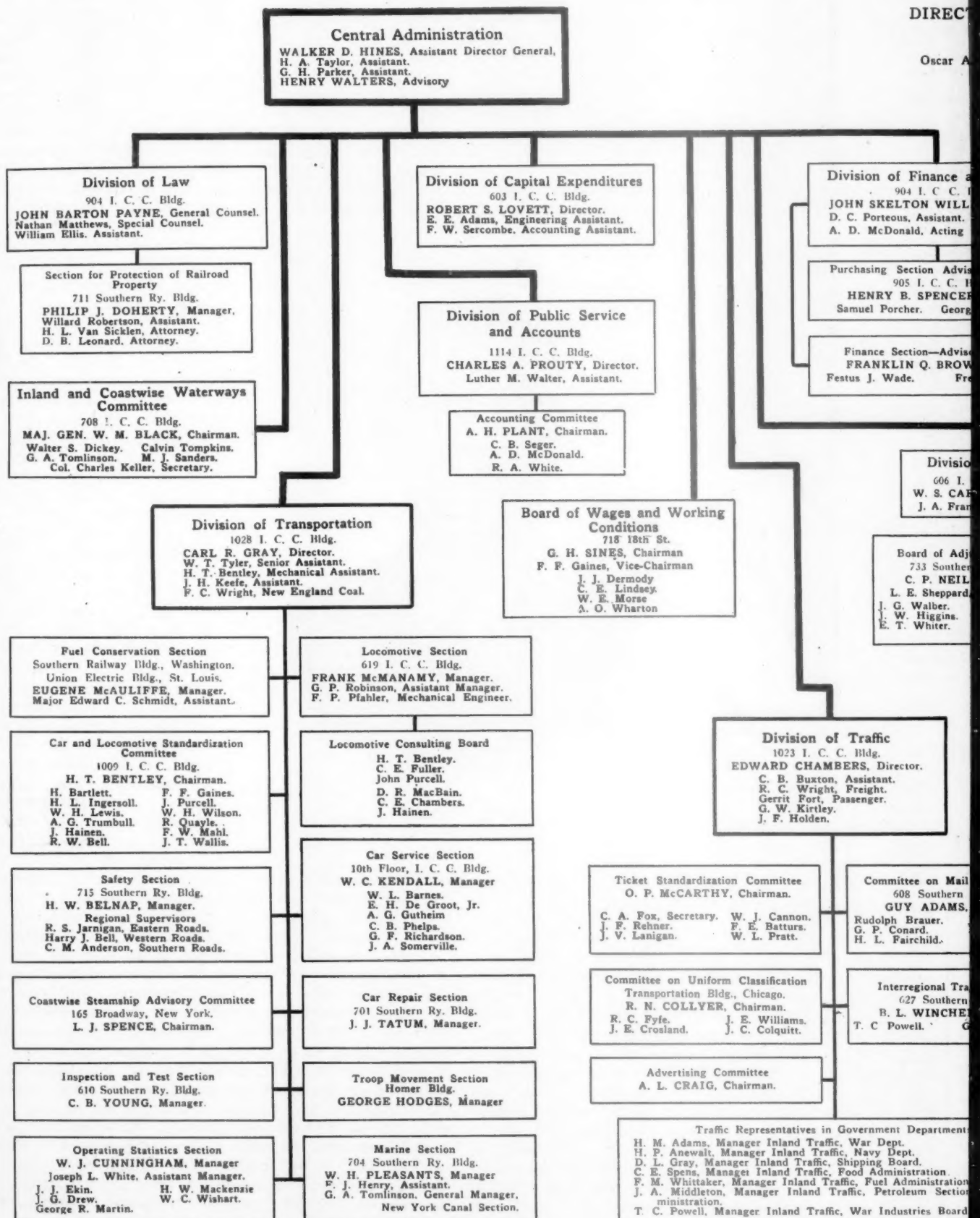
*Care of Records.*—Voucher papers filed in all steel cabinets of the vertical type. Claim less expensive than old-style binder and prevents mutilation and turned edges.

*Central Filing Bureau.*—All correspondence, leases and contracts filed in a central bureau. Insures uniformity in filing, complete files and avoids having each sub-department maintain separate files. Files are obtained by request slips signed by sub-department head.

*Central "Bring-Up" File.*—Papers which employee wishes brought to his attention at some future date for action, sent to central filing bureau, where they are filed in a special "bring-up" file in proper date order.



# Organization of the United States Railroad Administration



# Organization of the United States Railroad

## DIRECTOR GENERAL OF RAILROADS W. G. McADOO

Oscar A. Price, Assistant to the Director General  
913 I. C. C. Bldg., Washington.

Expenditures  
C. Bldg.  
Director.  
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Public Service  
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C. Bldg.  
OUTY, Director.  
ter, Assistant.

Committee  
Chairman.  
Donald.  
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Board of Wages and Working  
Conditions  
718 18th St.  
G. H. SINES, Chairman  
F. Gaines, Vice-Chairman  
J. J. Dermody  
C. E. Lindsey  
W. E. Morse  
A. O. Wharton

Division of Finance and Purchases  
904 I. C. C. Bldg.  
JOHN SKELTON WILLIAMS, Director.  
D. C. Porteous, Assistant.  
A. D. McDonald, Acting Treasurer.

Purchasing Section Advisory Committee  
905 I. C. C. Bldg.  
HENRY B. SPENCER, Chairman.  
Samuel Porcher. George G. Yoemans.

Finance Section—Advisory Committee  
FRANKLIN Q. BROWN, Chairman.  
Festus J. Wade. Frederick W. Scott.

Division of Labor  
606 I. C. C. Bldg.  
W. S. CARTER, Director.  
J. A. Franklin, Assistant.

Board of Adjustment No. 1  
733 Southern Ry. Bldg.  
C. P. NEILL, Chairman.  
L. E. Sheppard, Vice-Chairman.  
J. G. Walber. F. A. Burgess.  
J. W. Higgins. Albert Phillips.  
E. T. Whiter. W. N. Doak.

Division of Traffic  
1023 I. C. C. Bldg.  
EDWARD CHAMBERS, Director.  
C. B. Buxton, Assistant.  
R. C. Wright, Freight.  
Gerrit Fort, Passenger.  
G. W. Kirtley.  
J. F. Holden.

Ticket Standardization Committee  
O. P. McCARTHY, Chairman.  
C. A. Fox, Secretary. W. J. Cannon.  
J. F. Rehner. F. E. Batturs.  
J. V. Lanigan. W. L. Pratt.

Committee on Uniform Classification  
Transportation Bldg., Chicago.  
R. N. COLLYER, Chairman.  
R. C. Fyfe. J. E. Williams.  
J. E. Crosland. J. C. Colquitt.

Advertising Committee  
A. L. CRAIG, Chairman.

Traffic Representatives in Government Departments  
H. M. Adams, Manager Inland Traffic, War Dept.  
H. P. Anewalt, Manager Inland Traffic, Navy Dept.  
D. L. Gray, Manager Inland Traffic, Shipping Board.  
C. E. Spens, Manager Inland Traffic, Food Administration.  
F. M. Whittaker, Manager Inland Traffic, Fuel Administration.  
J. A. Middleton, Manager Inland Traffic, Petroleum Section.  
T. C. Powell, Manager Inland Traffic, War Industries Board.

Committee on Mail Transportation  
608 Southern Ry. Bldg.  
GUY ADAMS, Chairman.  
Rudolph Brauer. J. C. McCahan, Jr.  
G. P. Conard. H. T. Mason.  
H. L. Fairchild.

Interregional Traffic Committee  
627 Southern Ry Bldg.  
B. L. WINCHELL, Chairman.  
T. C. Powell. George F. Randolph.

Allegheny Regional District  
C. H. MARKHAM, Regional Director  
Philadelphia, Pa.

Southern Region  
B. L. WINCHELL, R.  
Healey Bldg., At.  
G. R. Loyall, Opera.  
Charles R. Capps, T.  
F. F. Gaines.

Southern Export Committee  
CHARLES T. AIREY, Chairman.  
Healey Bldg., Atlanta, Ga.  
W. M. Rhett, resident representative,  
New Orleans, La.  
J. W. Daley, resident representative.  
Galveston, Texas.

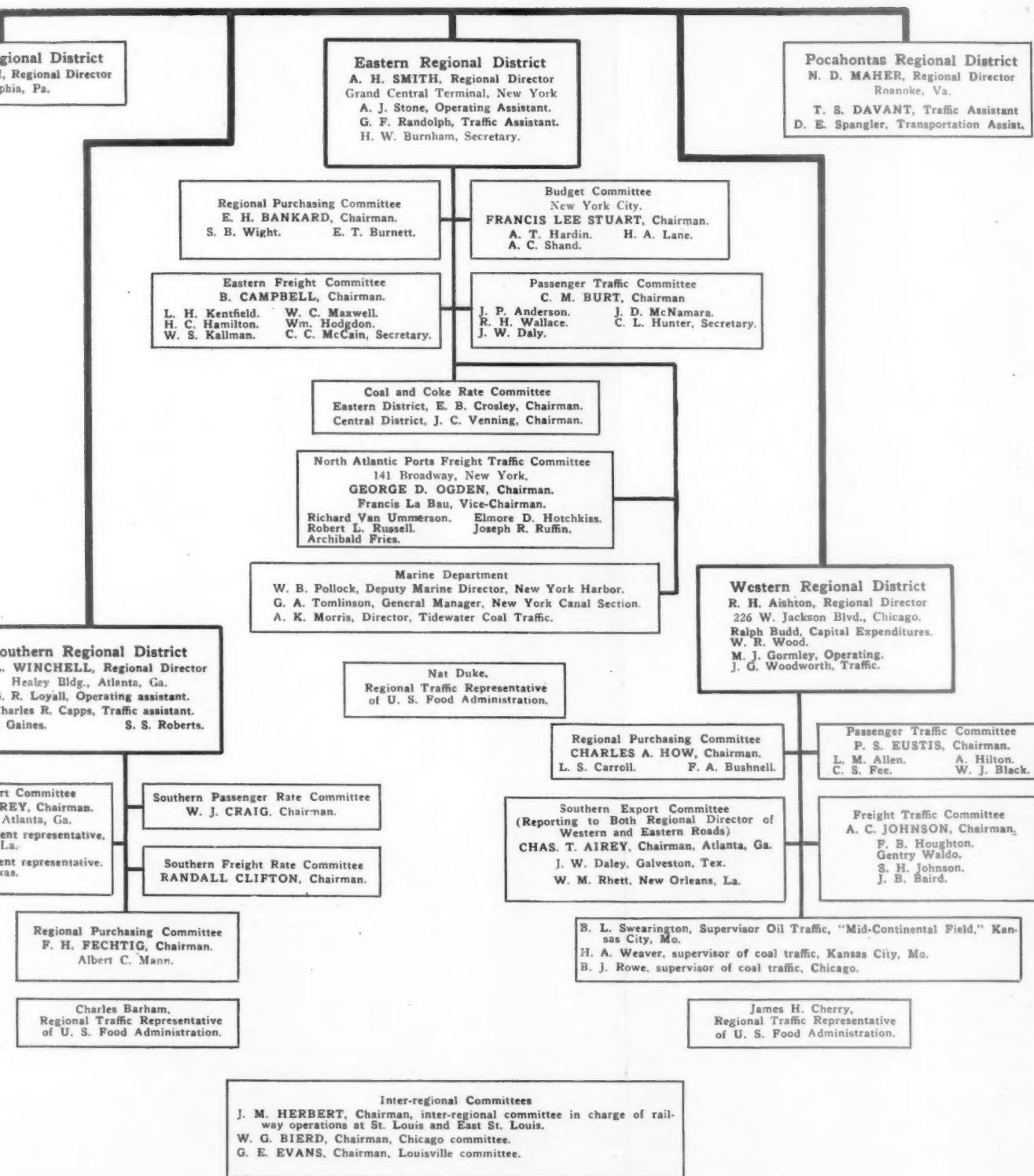
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June 14, 1918

## Regional Administration



# Federal • M

## Eastern Regional District

Alfred H. Smith, Regional Director

P. E. CROWLEY, Federal Manager, New York Central and Lake Erie & Pittsburgh; office at New York.

A. J. STONE, Federal Manager, Erie; office at New York.

F. P. GUTELIUS, General Manager, Delaware & Hudson; office at Albany, N. Y.

F. L. BLENDINGER, General Manager, Lehigh Valley; office at New York.

E. D. BRONNER, Federal Manager, Michigan Central and Chicago, Kalamazoo & Saginaw; office at Detroit, Mich.

F. H. ALFRED, Federal Manager, Pere Marquette; office at Detroit, Mich.

A. B. NEWELL, General Manager, Toledo Terminal Railroad; office at Toledo, Ohio.

H. E. WHITTENBERGER, General Manager, Grand Trunk Western Lines; office at Chicago.

## Ohio-Indiana District

H. A. Worcester, District Director; Office at Cincinnati, Ohio.

G. L. PECK, Federal Manager, Pennsylvania Lines west of Erie and Pittsburgh; Cincinnati, Lebanon & Northern and Lorain, Ashland & Southern; office at Pittsburgh.

C. W. GALLOWAY, Federal Manager, Baltimore & Ohio west of Parkersburg and Pittsburgh, and Dayton & Union; office at Cincinnati.

E. M. COSTIN, Federal Manager, Cleveland, Cincinnati, Chicago & St. Louis, Cincinnati Northern, and Central Indiana; office at Indianapolis, Ind.

B. C. STEVENSON, General Manager, Toledo, St. Louis & Western; office at Toledo, Ohio.

J. P. MAIN, General Manager, Detroit & Toledo Shore Line; office at Detroit, Mich.

G. J. DERBYSHIRE, General Manager, Chesapeake & Ohio of Indiana; office at Peru, Ind.

J. A. GORDON, General Manager, Detroit, Toledo & Ironton; office at Detroit, Mich.

M. S. CONORS, General Manager, Hocking Valley; office at Columbus, Ohio.

H. A. BOOMER, General Manager, Lake Erie & Western; office at Indianapolis, Ind.

## New England District

J. H. Hustis, District Director; Office at South Station, Boston, Mass.

P. R. TODD, Assistant to District Director and General Manager, Bangor & Aroostook; office at Bangor, Me.

B. R. POLLOCK, Federal Manager, Boston & Maine; office at North Station, Boston, Mass.

H. M. BISCOE, Federal Manager, Boston & Albany; office at South Station, Boston, Mass.

E. J. PEARSON, Federal Manager, New York, New Haven & Hartford and Central New England; office at New Haven, Conn.

D. C. DOUGLASS, General Manager, Maine Central; office at Portland, Me.

J. W. WARDLAW, General Manager, Central Vermont; office at St. Albans, Vt.

L. G. COLEMAN, General Manager, Grand Trunk Railway in New England; office at Portland, Me.

G. T. JARVIS, General Manager, Rutland; office at Rutland, Vt.

Late changes  
Not shown  
on chart.

The following changes should also be announced too late for incorporation  
REGIONAL ADMINISTRATION—  
as shown in the type above.

DIVISION OF TRANSPORTATION  
Operation.

DIVISION OF OPERATION—A  
CONTROL with offices in the South  
LOYALL, Chairman, O. H. Hobb, S. H.  
title with headquarters at Cincinnati cor  
and J. B. Ford.

DIVISION OF LABOR—G. W. W.  
EASTERN REGIONAL DISTRICT  
director, succeeding George F. Randolph.



## General Managers

### Allegheny Regional District

C. H. Markham, Regional Director, Office at Broad Street Station, Philadelphia.

ELISHA LEE, Federal Manager, Pennsylvania Lines east of Pittsburgh and Erie; office at Philadelphia.

A. W. THOMPSON, Federal Manager, Baltimore & Ohio Lines East.

### Pocahontas Regional District

N. D. Maher, Regional Director; Office at Roanoke, Va.

G. W. STEVENS, Federal Manager, Chesapeake & Ohio east of Louisville, Ky., Columbus and Cincinnati, Ohio, and the Chesapeake & Ohio Northern; office at Richmond, Va.

A. C. NEEDLES, Federal Manager, Norfolk & Western, Virginia & Carolina and New River, Holston & Western; office at Roanoke, Va.

J. H. YOUNG, Federal Manager, Virginian; office at Norfolk, Va. Mr. Young is also Federal Manager of the Norfolk Southern in the Southern Regional District.

### Southern Regional District

B. L. Winchell, Regional Director; Office at Atlanta, Ga.

E. H. COAPMAN, Federal Manager, Southern Railway, Georgia Southern & Florida, Alabama & Vicksburg, and Carolina, Clinchfield & Ohio of South Carolina; office at Washington, D. C.

C. M. KITTLE, Federal Manager, Illinois Central, Yazoo & Mississippi Valley and Gulf & Ship Island; office at Chicago.

W. L. MAPOTHER, Federal Manager, Louisville & Nashville and Louisville, Henderson & St. Louis; office at Louisville, Ky.

R. V. TAYLOR, Federal Manager, Mobile & Ohio and Gulf, Mobile & Northern; office at Mobile, Ala.

W. A. WINBURN, Federal Manager, Central of Georgia; office at Savannah, Ga.

J. H. YOUNG, Federal Manager, Norfolk Southern; office at Norfolk, Va. Mr. Young is also Federal Manager of the Virginian in the Pocahontas District.

### Northwestern Regional District

R. H. Aishton, Regional Director; Office at Chicago.

S. G. STRICKLAND, Federal Manager, Chicago & North Western; office at Chicago. F. WALTERS, General Manager.

Other appointments have not yet been announced.

### Central Western Regional District

Hale Holden, Regional Director; Office at Chicago.

Names of federal or general managers not yet announced.

### Southwestern Regional District

B. F. Bush, Regional Director; Office at St. Louis, Mo.

Pacific Coast Sub-district. District director not yet announced.

Names of federal or general managers not yet announced.

Changes should also be made in the chart on the adjoining pages, these changes having been made for incorporation in the chart itself.

ADMINISTRATION—Note the appointment of three Regional Directors in the West.

TRANSPORTATION—The name of this division has been changed to Division of Transportation.

OPERATION—A recently created COMMITTEE OF FREIGHT TRAFFIC in the Southern Railway Building, Washington, consists of GEORGE R. H. Hobb, S. H. Billings and E. T. Wilcox. A similar committee with the same name at Cincinnati consists of F. B. MITCHELL, Chairman, G. Krause, B. Arnold.

PERSONNEL—G. W. W. Hanger has been appointed assistant director.

REGIONAL DISTRICT—F. Labau has been appointed traffic assistant to the regional manager F. Randolph.





## George B. Harris

**G**EORGE B. HARRIS, chairman of the board of directors of the Chicago, Burlington & Quincy, died at his home in Chicago, on June 10, following an illness of about a month. Mr. Harris was in his seventieth year, and belonged to the same generation of railroad executives as Hughitt, Ripley, Cassatt and Earling. He was of the old school of railway executives who carried on their duties quietly and conscientiously and rarely took the public into their confidence. Mr. Harris was indefatigable in his efforts to build up the property which he served and thoroughly mastered every problem presented to him. Although he was rather gruff in manner, he possessed a keen and sympathetic appreciation of the trials and difficulties of his subordinates, and was ever ready to lend a helping hand to the unfortunate. As a result he won the love of the employees of his road as few railroad executives have succeeded in doing. He was a good judge of men and surrounded himself with a capable staff. While he exacted a full measure of effort from subordinate officers, he was quick to recognize and commend ability.

When he became president of the Chicago, Burlington & Quincy in February, 1901, the financial policy of the company was cautious and its operating methods conservative. These policies to which the railroad owed its high standing at that time were carried on by Mr. Harris until James J. Hill secured control. With marked adaptability Mr. Harris applied the Hill methods to the operation of the Burlington with success, and in this he was ably assisted by Darius Miller and Daniel Willard, later presidents of the Burlington and Baltimore & Ohio respectively.

Mr. Harris was born in Brookline, Mass., on December 20, 1848, and moved to Hannibal, Mo., with his parents when a boy of 16. His father was at that time appointed land commissioner of the Hannibal & St. Joseph, then a line across Missouri and subsidiary to the Burlington. Mr. Harris became an office boy for the road which employed his father and later became a clerk in the office of the treasurer and paymaster of the same line. From 1870 to 1875 he was cashier in the land department of the Burlington & Missouri River in Nebraska, with headquarters at Lincoln, Neb. From 1876 to 1877 he was secretary of the South Platte Land Company in the same city. In 1878 he returned to the Burlington & Missouri River as purchasing agent, and in the following year went to the Atchison & Nebraska, at Atchison, Kan., as superintendent and general agent. In 1880 he was again employed by the Burlington & Missouri River as assistant general freight agent, with headquarters at Omaha, Neb. Two years later he went to Chicago as purchasing agent of the Chicago, Burlington & Quincy. In 1883 he was ap-

pointed assistant to the general manager of the Atchison, Topeka & Santa Fe, at Topeka, Kan., and in 1884 went to St. Paul, Minn., as general manager of the Chicago, Burlington & Northern. He was elected president of that road, with headquarters at St. Paul, in 1889. In 1890 he became second vice-president of the Chicago, Burlington & Quincy, with office at Chicago, and continued in that position until February 20, 1901, when he was elected president in place of Charles E. Perkins, resigned. On January 15, 1911, the directors finally yielded to his demand that he be replaced by a younger man. He was succeeded by Darius Miller, who died some years later, and in turn was succeeded by Hale Holden, the present president. From 1911 up to the time of his death, Mr. Harris was chairman of the board of directors, and in that capacity gave the younger executives of the road the benefit of his long experience and his thorough knowledge of the property.



George B. Harris

## Clean Coal

**M**ORE VIGOROUS REGULATIONS than those heretofore issued to insure the production of clean bituminous coal have been made public by the United States Fuel Administration. These regulations will become effective at 7 A. M., June 1, 1918, and supersede all prior orders on this subject.

No bituminous coal will be permitted to be sold, shipped, or distributed, if the same contains such quantity of rock, slate, bone, sulphur, fire clay, shale, or other impurities, that it would not have been considered merchantable prior to January 1, 1916.

Shipments from bituminous coal mines in which the coal is naturally of such character as to be unfit for market may be prohibited by the Fuel Administration. Operators also of bituminous mines whose products are capable of being made

merchantable by complying with the requirements of the Fuel Administration in regard to the removal of impurities, and who fail to comply with those requirements, will be required either to unload and clean such coal, if it has been loaded into cars or bins, or to deduct 50 cents per ton from the government price. In the event of repeated violations on the part of such operators, such further action will be taken by the Fuel Administration as it may deem advisable.

The Fuel Administration statement says that the enormous increase in the demand for bituminous coal incident to the entrance of the United States into the war, encouraged the opening of numerous so-called coal mines, a large percentage of the output of which resembled coal solely in color. This product brought the same price on the market as clean coal. The inevitable result was a general deterioration in the quality of all bituminous coal put on the market, and a consequent proportionate decrease in the heat generated in the furnaces of the country.

The Administration also made public an order under which operators of bituminous coal mines may receive a special allowance for coal mechanically washed or extraordinarily cleaned or picked in such manner that the fuel value of the coal will be substantially increased by the removal of waste and impurities. No special allowance, however, will be made for the ordinary method of cleaning or picking coal.

## Canada's Big Railway Year

A GENERAL REVIEW of railway operations in Canada for the calendar year 1917 was presented in the *Railway Age* of January 4, 1918, page 36 and some of the more important problems confronting the Canadian railways were considered in an article in the issue of April 5, page 849. In dealing now with the official figures for the statistical year ended June 30 last the task is reduced to more or less simple proportions. There was an unavoidable element of speculation in the general groundwork of the article in the issue of January 4. The definite and established facts, however, are bigger, better and more inspiring than were the assumptions made at that time. That is to say, when all the accounts had been worked out, and details woven into a fixed fabric, the showing makes 1917 stand out more conspicuously as a year of unprecedented railway activity than was assumed from incomplete data.

It is fashionable to start all reviews with gross earnings. They are regarded as pivotal in their relationship to other results, and properly so; but it is quite possible to exaggerate their essential value. It is only when other things are equal that total receipts become basically important. In this instance, the balance is preserved. The gross earnings had a total of \$310,771,479. When the earnings of such units as the Pullman Company and the tunnel and bridge companies are included the final aggregate rises to \$313,492,949. The betterment over 1916 was \$49,965,792. The full meaning of this growth is not grasped until the eye helps the mind by glancing at such a comparative statement of gross earnings as the following:

1887 .....	\$38,841,609
1897 .....	52,353,276
1907 .....	146,738,214
1917 .....	310,771,479

The advance of gross earnings must be measured, of course, in the light of increased mileage, and by that test the foregoing results do not lose their inspiring value. Taking the same ten-year periods, the facts with respect to earnings per mile of line are as follows:

1887 .....	\$3.188
1897 .....	3.163
1907 .....	6.536
1917 .....	8.051

Rail line in 1917 produced \$295,550,030, water line \$4,397,311, incidental \$10,407,099 and joint facilities \$417,039. These totals included \$220,032,565 from freight, and \$63,131,647 from passengers.

Operating expenses aggregated \$222,890,637, or \$42,348,378 more than for the preceding year. An analysis of this sum shows a fair proportion charged to maintenance. The figures for the various divisions of accounts are as follows:

		Per Cent
Way and structures.....	\$41,154,193	18.46
Equipment .....	46,371,178	20.80
Traffic .....	6,236,811	2.79
Transportation—rail .....	114,327,344	51.29
Transportation—water .....	3,271,893	1.47
Miscellaneous operations .....	3,962,544	3.40
Transportation for investment—Cr.....	18,207	0.01
Total .....	\$222,890,637	

The traffic out of which earnings grew was represented in the moving of 121,916,272 tons of freight and 53,749,680 passengers. The growth in public service was in the same ratio as increased earnings.

Facts collateral to earnings, operating expenses and public service, might be epitomized as follows:

Operating mileage .....	38,604
Passengers carried one mile.....	3,150,127,428
Tons, carried one mile.....	31,186,707,851
Receipts per passenger per mile, cents.....	1.946
Receipts per ton per mile.....	.690
Passengers per train.....	59
Tons per train.....	436
Average passenger journey, miles.....	52
Average freight haul.....	256
Passengers per mile.....	1,362
Tons per mile.....	3,159
Passengers density ..	79,829
Freight density .....	807,946
Passengers per car.....	16
Tons per car.....	22.24

The salient fact in the foregoing tabular statement is the average trainload. It has made most gratifying gains during recent years, and particularly since the stress of war conditions, in the face of shortage of equipment, led to intensive loading. It had crept up from 260 tons in 1907 to 342 tons in 1913. Then it began to move in real earnest, and passed quickly to 411 tons in 1916 and on to 436 tons last year. The so-called Railway War Board helped in the valuable work, as well as in the betterment of the carload as was shown in the above mentioned articles.

The effect of war conditions is seen in train mileage. In 1914, when 46,702,280 passengers were carried, the mileage of passenger trains was 45,219,048; in 1917, with 53,749,680 passengers, the mileage was 44,083,575. In 1916 it was nearly two millions less. Freight train mileage is a direct matter of tonnage to be moved, and in the face of a large increase in that regard the total ran up from 55,343,193 in 1914 to 62,863,724 in 1917. Nevertheless, heavier carloads and trainloads kept down the aggregate quite materially.

For the first time, in 1917, the hour unit for the measurement of compensation to railway employees was given effect. This was done wholly for the sake of preserving uniformity with the prescription of the Interstate Commerce Commission. It is too early to say whether or not the new method will yield results which can be regarded as a countervail to the loss of all bases of comparison for preceding years. It is very difficult indeed to prescribe a schedule and a classification which will be satisfactory, owing to the confusion created by the plan in vogue of having not only three or four scales for employees of the same class, but of having this mixed system applicable to such employees on the same road. In this connection, it may be said that the salaries and wages bill in Canada for 1917 amounted to \$129,626,187.

Ten months of the current statistical year have passed, and it seems comparatively safe to predict that, notwithstanding the trying conditions which developed last winter, gross earnings will not fall behind those for 1917. The railways have had four months under the increased traffic rates, and the effect is appreciable. Of course, this estimate can only be based on the results revealed in the weekly returns of the larger roads; but it may be said that nothing has thus far occurred to indicate otherwise than a gain for the year ending June 30. That this will carry with it a corresponding gain in net earnings seems more or less doubtful, in view of the rising cost of operation. Railways are not immune from the higher cost of living, so keenly felt at the present time by individuals. Those which are sufficiently prosperous find the collector of special taxes at their doors to take away a considerable proportion of betterments realized; so that it seems almost inevitable the total of net earnings for all railways in Canada will show a decline for the current year.

Within the past few weeks the prime minister has foreshadowed the extension of public ownership by the addition of the Grand Trunk and Grand Trunk Pacific, as well as a batch of independent branch lines in the Maritime Provinces, to the system now operated by government. This



movement has been foreseen ever since the Drayton-Acworth report was made more than a year ago, and is the sequence to the taking over of the Canadian Northern. These roads had fallen into financial difficulties, and it was obvious, moreover, that much duplication of mileage could be eliminated, and economy of operation brought about by a comprehensive scheme of consolidation. This leaves only a score of roads of even local importance, apart from the Canadian Pacific, outside the sweep of expropriation by government. The discussion which has taken place in parliament points to the conclusion that the steps thus far

taken, momentous and extensive as they undoubtedly are, do not entirely dispose of what we have come to call the Railway Problem in Canada. Whether or not it will end in the establishment of a single system depends very much on the turn of events and the development of public judgment.

Conservation has extended its long arm to official publications. All government reports are this year reduced to mere skeletons of their former bulk, and railway reports are among those which have been much abridged. All details omitted are, however, kept available for inquirers.

## Three New Regional Directors Appointed

Hale Holden Becomes Director of Central Western Region  
and B. F. Bush Director of Southwestern Region

**D**IRECTOR GENERAL McADOO on Wednesday announced the division of the Western railroads into three regions instead of one region as heretofore.

R. H. Aishton, hitherto regional director of the Western Region is appointed regional director of the Northwestern Region with office at Chicago, with jurisdiction over the railroads from Chicago to the North Pacific coast.

regional directors will have jurisdiction are given in the tables below on this and the following page.

### The New Regional Districts

#### NORTHWESTERN REGION

The Northwestern Regional Director will have jurisdiction over the following roads:

Chicago & Northwestern.  
Chicago, St. Paul, Minneapolis & Omaha.  
Chicago Great Western.  
Chicago, Milwaukee & St. Paul.  
Great Northern.  
Minneapolis & St. Louis.  
Minneapolis, St. Paul & Sault Ste. Marie.  
Northern Pacific.  
Oregon-Washington R. R. & Navigation.



Hale Holden

Hale Holden is appointed director of the Central Western Region with office at Chicago with jurisdiction over the railroads in the territory from Chicago to the Pacific coast.

B. F. Bush, president of the Missouri Pacific, is appointed regional director of the Southwestern Region with office at St. Louis and with jurisdiction over the railroads running from St. Louis to the southwest.

There will also be a Pacific coast sub-district under Mr. Holden, but the appointment of the district director has not yet been announced.

The roads and lines over which the three newly appointed



B. F. Bush

Southern Pacific Lines, north of Ashland, Ore.  
Spokane, Portland & Seattle.  
Spokane International.

## CENTRAL WESTERN REGION.

The Central Western Region will comprise the following lines:

Atchison, Topeka & Santa Fe.  
Chicago, Rock Island & Pacific, except the line St. Louis to Kansas City, the line east of El Reno, the line from El Reno to Memphis, and branches south of Chickasaw, Okla.  
Chicago, Peoria & St. Louis.  
Chicago & Alton.  
Chicago & Eastern Illinois.  
Chicago, Terre Haute & Southeastern.  
Chicago, Burlington & Quincy.  
Colorado & Southern.  
Denver & Rio Grande.  
El Paso & Southwestern.  
Illinois Central, line south of Cairo & Paducah.  
Los Angeles & Salt Lake.  
Northwestern Pacific.  
Oregon Short Line.  
Quincy, Omaha & Kansas City.  
Southern Pacific Lines west of El Paso and Ogden, except those north of Ashland, Mo.  
St. Joseph & Grand Island.  
Union Pacific.  
Western Pacific.

## SOUTHWESTERN REGION.

The Director of the Southwestern Region will have jurisdiction over the following roads:

Fort Worth & Denver.  
Fort Worth & Rio Grande.  
Gulf Coast & Santa Fe.  
Gulf Coast Lines.  
Galveston, Harrisburg & San Antonio.  
Houston & Texas Central.  
Houston, East & West Texas.  
International & Great Northern.  
Kansas City Southern.  
Louisiana & Arkansas.  
Louisiana Ry. & Navigation Co.  
Louisiana Western.  
Midland Valley.  
Missouri Pacific.  
Missouri, Kansas & Texas.  
Morgan's Louisiana & Texas.  
Rock Island, lines south of Chickasaw, Okla.; El Reno to Memphis and branches, and St. Louis to Kansas City.  
St. Louis & San Francisco.  
St. Louis Southwestern.  
San Antonio & Aransas Pass.  
Texas & Pacific.  
Texas & New Orleans.  
Wabash (St. Louis to Kansas City and Omaha).  
Wichita Falls & South Western.  
Texas Midland.  
Wichita Valley.

## Price Assistant to the Director General

A. Price, heretofore private secretary to the director general, has been appointed assistant to the director general, and M. Brice Clagett has been appointed private secretary to the director general; J. W. Roberts has been appointed auditor of the Railroad Administration, reporting to the Division of Public Service and Accounts.

**HUGE COFFEE POT FOR SOLDIERS.**—What is believed to be the largest coffee pot in the world has just been completed at the power house of the Pennsylvania Railroad at Front and Third streets, Long Island City. In the pot 418 gallons of coffee may be made every half hour. It is for the use of the Canteen Section of the Long Island City Branch of the Red Cross, which has taken upon itself the task of serving coffee and sandwiches to the soldiers entraining and detraining there every day.

**FRANCE HONORS RAIL WORKERS.**—Premier Clemenceau has signed an order praising the railroad workers for the endurance and energy they have shown in moving troops to the present battle-front. According to despatches from Paris dated April 21, two high railroad officials have been made Commanders of the Legion of Honor, two others have been made officers of the order, and seventeen have been made Chevaliers. Twenty railroad men have received military medals.

Train Accidents in April<sup>1</sup>

THE FOLLOWING IS A LIST of the most notable train accidents that occurred on the railways of the United States in the month of April, 1918:

Collisions						
Date	Road	Place	Kind of Accident	Kind of Train	Kil'd	Inj'd
10.	N. Y. N. H. & H....	Pomfret	rc	F. & F.	4	3
25.	Chicago, B. & Q....	Bayard.	bc	F. & F.	6	3
†27.	N. Y. C. & St. L....	Moorheads	bc	P. & F.	1	7
28.	Macon & B.....	Odessadale.	bc	P. & F.	0	2
29.	Louisville & N.....	Cave City	rc	F. & F.	1	2
Derailments						
Date	Road	Place	Cause of Derailment	Kind of Train	Kil'd	Inj'd
5.	St. Louis-S. F.....	Hamden.	d. bridge	P.	1	32
8.	N. Y. Central.....	Amsterdam.	d. truck	P. & F.	1	23
8.	Texas & N. O.....	Colmesneil.	d. eq.	P.	0	3
13.	Pennsylvania .....	Dix.	b. rail	P.	0	1
14.	Texas & Pac.....	Baird.	tornado	F.	0	1
†15.	Long Island .....	Central Islip.	b. rail	P.	3	37
17.	Atlantic C. L.....	Cross Bayou	fire	P.	0	9
18.	Nashville, C. & St. L.	Vinings.	.....	P.	0	3
*19.	Chicago, M. & S. P.	Freeport.	b. wheel	F.	0	0
21.	Southern .....	Athens, Tenn.	.....	F.	2	0
29.	Erie .....	Corning.	b. journ'l	F.	0	3
30.	Northern Pacific ....	Casselton.	malice	F.	..	..

The trains in collision near Pomfret, Conn., on the 10th were eastbound freights. The leading train had been nearly stopped and the following train struck it at about 15 miles an hour, damaging the engine, caboose and ten cars. One conductor and two brakemen were killed, and four other trainmen were injured, one of them fatally. The second train was running in disregard of a caution card, requiring the speed to be kept under control.

The trains in collision at Moorheads, Pa., on the 27th were a westbound passenger and an eastbound freight. The freight was standing on a side track and the passenger train ran over a misplaced switch and into the head of the freight. Both engines, three cars on the passenger train and six cars on the freight, were badly damaged. One passenger was killed and three passengers and four employees were injured.

The trains in collision on the Chicago, Burlington & Quincy at Bayard, Nev., on the 25th were an eastbound through freight and a westbound work train. Both engines and six cars were badly damaged. Two trainmen and four laborers were killed and three employees were injured. There was a blinding snowstorm at the time and the work train approached the station not under complete control.

The trains in collision at Odessadale, Ga., on the 28th were a westbound passenger and an eastbound freight. The conductor of the passenger train and one passenger were injured. The collision was due to confusion in flagging.

The trains in collision at Cave City, Ky., on the 29th were southbound freight No. 71, second section, and freight No. 13, third section, following it. The leading train was standing at a water station. One brakeman was killed, and two other trainmen were injured. The engineman of the approaching train had fallen asleep.

The train derailed near Hamden, Okla., on the fifth was northbound passenger No. 716. The train, running at 30 miles an hour, broke through a bridge which had been weakened by a flood, and the engine, baggage car and first two coaches fell through and were partly submerged in a stream. The baggageman was killed and 28 passengers and 4 trainmen were injured.

The trains involved in the derailment on the New York Central about one mile west of Amsterdam, N. Y., on the 8th were an eastbound freight, a westbound passenger train, (the Empire State express No. 51) and eastbound express

<sup>1</sup>Abbreviations and marks used in Accident List:  
rc, Rear collision—bc, butting collision—xc, Other collisions—b, Broken—d, Defective—unf, Unforeseen obstruction—unx, Unexplained—derail, Open derailing switch—ms, Misplaced switch—acc, obst., Accidental obstruction—malice, Malicious obstruction of track, etc.—boiler, Explosion of locomotive on road—fire, Cars burned while running—P, or Pass., Passenger train—F, or Ft., Freight train (including empty engines, work trains, etc.)—Asterisk, Wreck wholly or partly destroyed by fire—Dagger, One or more passengers killed.



No. 16. The freight train, on track No. 4, was derailed by the breaking of an arch bar of a truck of a loaded freight car, and several cars fell across tracks 3 and 2. The Empire State express, on track No. 2 was derailed by the obstruction. The engine was overturned and the engine-man was killed. A part of the wreckage fouled track No. 1, and train 16 ran into it; its engine was partly overturned and the engineman was injured. The fireman of No. 51 was also injured, and the newspapers printed the names of 20 or more passengers said to have been injured, but not seriously. This accident was reported in the *Railway Age* of April 12, page 968.

The train derailed near Colmesneil, Tex., on the 8th was northbound passenger No. 155. The locomotive was overturned and three employees were injured. The derailment was due to the wheels of the engine truck becoming locked, which resulted in the left front wheel climbing the rail. Truck inspectors had failed to notice that the brake shoes were not in place and that the truck had been running to the left.

The train derailed at Dix, Pa., on the 13th was eastbound express No. 510. One coach and one parlor car were thrown off the track by a broken rail. Sixteen passengers were injured, all except one of the injuries being classed as slight.

The train involved in the accident on the Texas & Pacific, near Baird, Tex., on the 14th of April, was a westbound freight. The train was struck by a tornado, and five loaded cars in the middle of the train were overturned and fell in a wreck in the ditch. One trainman was injured.

The train derailed on the Long Island Railroad near Central Islip, L. I., N. Y., on the morning of the 15th of April, about 4 o'clock, was a westbound special passenger, carrying 700 soldiers from Camp Upton to Long Island City. Six cars were overturned and ditched. Three soldiers were killed and 37 were injured. The cause of the derailment is believed to have been a broken rail. An officer of the road writes that the cars, all of which were steel, came through the wreck with very little injury. The damage was confined almost entirely to the trucks. The train consisted of a locomotive and 12 cars, and is said to have been running at about 30 miles an hour. The broken rail was of 80 lb., A. S. C. E., section, rolled by the Lackawanna Iron & Steel Company in 1898.

The train derailed at Cross Bayou, Fla., on the evening of the 17th, was southbound passenger No. 39. The train was derailed by the weakening of a trestle which had been damaged by a forest fire which occurred a short time before the train arrived. Nine passengers were injured slightly. The engine passed over the weakened portion of the bridge. No car was overturned.

The train derailed at Vinings, Ga., on the morning of April 18, about 4 o'clock, was the southbound Dixie Flyer. The engine was overturned, and the fireman was fatally scalded. Three other trainmen were injured.

The train derailed near Freeport, Ill., on the 19th was an eastbound freight. The wreck took fire from friction of metals when the cars were wrecked and 14 loaded cars were burnt up. Estimated loss \$30,000. The cause of the derailment was a broken wheel.

The train derailed near Athens, Tenn., on the 21st was freight train No. 53, third section. Fourteen loaded cars were thrown off the track and wrecked by the sudden stopping of the train when the brakes were applied by the cutting of the hose. Of five trespassers riding on the train, two were killed. One of the trespassers had cut the hose with a view to stopping the train at Athens, the speed of the train preventing them from carrying out their original purpose of jumping off while it was in motion. The road was blocked for about twelve hours.

The train derailed near Corning, N. Y., on the 29th was a westbound freight. Six cars of coal and a number of

empty cars were piled up in a bad wreck blocking both main tracks. Three trespassers riding in a freight car were injured. The derailment was caused by a broken journal.

The train derailed on the Northern Pacific near Casselton, N. D., on the 30th was the westbound North Coast Limited. The locomotive and first four cars were ditched, but there were few injuries to persons, and all were reported slight. The derailment was due to the misplacement of a switch by mischievous boys, 12 and 13 years old, with the avowed intention of seeing a wreck. They were taken before a court and were sent to the State Reform School.

*Electric Car Accidents.*—Serious accidents to street cars were reported in the newspapers in the month of April at Tompkinsville, N. Y., on the 19th; Texarkana, Tex., on the 27th and at Birmingham, Ala., on the 25th. In the last-named accident a car was overturned on a curve and four passengers were killed.

## An English View of Government Ownership

(From the Railway Gazette, London.)

A RECENT ISSUE of the *Railway Review* (the organ of the British railway labor unions) contains a rather disingenuous plea for railway nationalization after the war. By way of introduction, the writer admits that:—

"To the man in the street the question of railway nationalization may not be enticing today as it was before the war . . . passenger fares have gone up 50 per cent, excursion trains abolished, no certainty in the delivery of goods and parcels, so that in many cases he may be thinking that state ownership is not an unmixed blessing. Railway men, however . . . know that never since the inception of railways have they been worked so efficiently or so much traffic handled in relation to staff employed. . . . The steady stream of munitions . . . the flow to the docks of all the paraphernalia of war . . . a most smashing argument for public ownership of railways, for under the old competitive system of handling traffic and running railways such work would have been impossible."

We are familiar with this sort of argument in the columns of the lay press, but the *Railway Review* ought to—and does—know better. Our railways are being efficiently worked in war time precisely because from the outset of war the government has very wisely left their operation in the hand of the experts responsible for administration and operation during times of peace. Anyone with any knowledge of the results of direct industrial control by the state at present will realize how much the country has gained, and how the prosecution of the war has been aided, as the result of not having state railways.

THE GRAND TRUNK EMPLOYEES' PATRIOTIC ASSOCIATION of Toronto has contributed for patriotic purposes \$30,-989.31. The association was organized in August, 1915, and the financial statement is from that date to December 31, 1917. To the Toronto and York Patriotic Fund was donated \$15,000; to the British Red Cross, \$2,750; British Sailors' Relief, \$1,000; motor ambulances, \$3,093.20, and Christmas boxes to enlisted men, \$910.50. These are some of the larger items of disbursement.

245 AMERICAN LOCOMOTIVES are now in operation on railway lines in France, according to press despatches. They were brought to France in parts and set up in the army machine shops. Likewise, 514 American freight cars of thirty-tons capacity each have been set up, and 700 more are in process of being assembled, while another 700 are on the way. The ordinary freight car of France is of the ten-ton type.

## General News Department

For the Alaska railway, the appropriations committee of the House of Representatives has decided to approve for the next fiscal year an appropriation of \$5,250,000. This would keep at work the present force of 5,000 men.

**Repairs of locomotives** are now being rushed. Frank McManamy, manager of the locomotive section of the Railroad Administration, says that on the government-controlled roads about 4,800 engines are passing through the shops each week, or 700 more than a year ago.

**Camp Upton**, on the Long Island Railroad, 65 miles east of New York city, was visited on Sunday last, by about 17,000 people. Most of them traveled from New York by the Long Island Railroad, but every road leading to the camp was congested by automobile traffic.

**Car Seals** are to be investigated by a committee of customs officers which has just been appointed. The committee will meet at Buffalo. It will be particularly interested in seals of the self-locking type and a suitable seal for use with cord or other material for securing packages.

**Freight congestion**, east of the Mississippi River, is now virtually ended, or nearly so, according to a review compiled by the Railroad Administration. Only about 11,000 cars above normal were this week reported on Eastern lines, as compared with 160,000 above normal last January.

**An appropriation of \$3,500,000** for the continuation of the railroad valuation work for the fiscal year ending June 30, 1919, is included in the sundry civil appropriation bill, reported to the House on June 10. Other appropriations for the Interstate Commerce Commission amount to \$2,045,000.

**Stockyards at railroad terminals** are the subject of a resolution, adopted by the Senate on June 6, directed to the director general of railroads, calling for information as to what, if any, action is contemplated in regard to taking over such yards as a part of the railroad system; and as to what, if any, additional legislation is necessary. The resolution was introduced by Senator Norris of Nebraska.

**A senior inspector of motive power** is wanted by the United States Civil Service Commission, for a position in the Division of Valuation, of the Interstate Commerce Commission, Eastern district; salary \$1,800 a year. Applications will be received up to July 16. Applicants must be between 25 and 60 years old and the examination will cover the qualifications for all grades in this department up to \$3,600 a year.

**The airplane mail service** has somewhat improved its performance during the past week. On June 7, the flyer from New York to Philadelphia, and the one from Philadelphia to New York, both decided not to start because of unfavorable weather; and the same condition was reported on June 11. A flight was made from New York to Boston on June 6, and it was the intention to return the next day, but the actual start from Boston was not made until June 11. Lieut. T. H. Webb, on that day, came through in three hours, carrying with him, as passenger, Postmaster W. F. Murray, of Boston. Also on board was the aviator's mechanic, and the mail weighed 20 lb. The airplane mail service between London and Paris is reported as very successful, the third day's round trip having been made in five hours, fifteen minutes.

**Complete control of iron**—that is, of the distribution of all manufactured steel products and pig iron, has been taken over by the War Industries Board. An agreement has been entered into with a committee of the American Iron & Steel Institute under which the board will pass upon all applications for steel products and pig iron. With certain exceptions, pig iron or steel manufactured products are to be shipped only on priority certificates issued by the Priorities

division of the board. Reports are to be made weekly of shipments made not covered by priority certificates and if there is still any surplus it may be disposed of to other customers if approved by the director of steel supply, J. L. Replegle. It is understood that there will be little or no steel for non-essential industries.

**Secrecy as to troop movement** is called for by the committee on Public Information, in a circular addressed to editors and correspondents. Following the publication recently of a notice of a troop train movement due to occur in eastern Illinois, the track was tampered with. Enemy sympathizers evidently learned of the troop train movement because of the premature newspaper publication of the fact, and removed rails from the track of the Wabash road. A trackwalker luckily discovered the break in time to repair the damage before the troop train passed.

### New Railway Units Organized

The War Department announces that the organization of five new regiments and nineteen battalions of railway engineers is being completed by S. M. Felton, Director General of Military Railways. The work has been done in conjunction with the Engineer Corps. When the new forces are put on duty, there will be 50,000 Americans engaged in railroad construction and operation in France. A total of \$160,000,000 has been spent on railway materials alone, this sum not including supplies provided and used by the Engineer Corps proper. All the nine regiments now in service have been in France since August, 1917. Six of them have been engaged in construction work, building and rebuilding railways, building docks, rearranging terminal facilities in the line of efficiency and generally providing for the heavy shipments of Americans and American supplies. The other three regiments have been engaged in operation. Some of the railway troops have been engaged in the actual fighting line. The new troops will be used part for construction and maintenance, and part for operation. They also will do their part with the rifle and the bayonet should necessity arise. The \$160,000,000 used for railway supplies has gone for such items as 1,727 engines, 22,630 freight cars, and 359,000 tons of steel rails. Much of the work thus far has had to do with terminal facilities, including wharves, docks and lighterage at the water front, switching facilities at inland points, shops, round-houses, etc.

### Washouts in Iowa

Exceptionally heavy rains inundated railway tracks in central Iowa and caused a suspension of train movement on a number of lines the latter part of last week. On June 3, the Chicago-Omaha line of the Rock Island was washed out at points near Grinnell, Malcolm, Brooklyn, Carnforth and Victor. The line between Des Moines and St. Paul was also washed out between Cambridge and Buckeye.

The Chicago & North Western encountered its greatest trouble near Tama, Iowa. The Chicago-Omaha line was flooded between that point and Montour and the branch running northwest from Tama was washed out at Eldora, Gifford and Gladbrook. The Chicago-Omaha line was also washed out between Dunlap and Dow City, and at Boone.

The Chicago, Milwaukee & St. Paul suffered its most severe washout between Amana and North English on its Cedar Rapids line. On Chicago Great Western there were washouts between Carroll and Harlan, and between Ira and Baxter. The Lehigh branch was also flooded. Other Iowa railways also suffered considerable damage from high water. For several days passenger trains were delayed on account of floods, and trains had to be detoured at many places.



## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF APRIL, 1918.

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	(inc. misc.)	Way and structures.	Maintenance of equipment.	Traffic.							
Alabama & Vicksburg.....	141	\$137,988	\$40,972	\$193,731	\$16,333	\$30,914	\$4,606	\$64,133	\$6,600	63.92	\$69,882	\$8,593	\$61,196	\$44,171
Alabama Great Southern.....	312	484,929	178,522	711,857	50,306	146,626	13,449	226,165	13,286	63.45	260,190	21,229	238,955	67,137
Ann Arbor.....	293	223,648	37,575	271,350	50,556	48,956	4,753	117,051	8,736	84.94	44,059	13,100	30,956	29,822
Arizona Eastern.....	377	298,872	51,888	374,466	59,999	45,308	2,382	78,228	15,883	55.48	166,684	17,056	149,598	33,825
Atchafalaya, Topeka & Santa Fe.....	8,646	9,182,093	2,609,098	12,837,467	1,467,073	1,911,150	147,321	3,634,334	198,693	50.57	5,187,938	556,897	4,630,885	1,531,689
Atlanta & West Point.....	93	104,725	74,411	198,036	18,930	32,979	3,752	59,258	5,846	62.23	74,785	7,600	67,169	41,149
Atlantic, Birmingham & Atlantic.....	639	256,529	332,046	74,066	75,347	74,066	10,999	167,042	12,596	103.43	8,058	15,700	23,939	68,138
Atlantic & St. Lawrence.....	166	125,660	21,287	146,947	37,235	43,469	3,664	118,905	5,448	129.05	50,844	11,346	62,190	30,300
Atlantic City.....	170	149,332	103,317	271,507	33,321	33,869	1,695	131,183	7,113	73.96	70,687	12,000	58,686	28,319
Atlantic Coast Line.....	4,784	2,928,917	1,143,186	4,397,989	435,654	641,221	48,260	1,664,390	85,228	65.81	1,503,730	200,000	1,303,730	405,769
Baltimore & Ohio.....	4,948	9,645,505	2,155,472	12,699,042	1,630,877	3,219,396	162,112	5,337,447	274,452	85.86	1,796,339	461,564	1,334,079	789,852
Baltimore & Ohio Chicago Terminal.....	79	.....	435	156,546	7,532	21,228	940	134,347	8,253	139.63	8,446	32,376	23,930	74,360
Baltimore, Chesapeake & Atlantic.....	87	69,465	34,722	104,187	7,532	21,228	940	11,016	2,023	86.18	14,813	12,057	2,756	20,581
Bangor & Aroostook.....	632	361,480	68,358	429,838	63,681	68,021	3,435	136,805	11,850	79.74	17,735	139,676	250,576	45,934
Belt, Ky. Co. of Chicago.....	31	.....	.....	353,149	38,970	49,898	244	187,079	7,455	77.74	71,521	28,046	43,474	45,934
Bessemer & Lake Erie.....	208	814,547	28,694	864,950	115,863	198,212	12,412	311,872	20,761	93.55	2,278	19,700	201,952	191,138
Birmingham & Garfield.....	36	261,764	3,161	270,790	35,515	45,220	1,108	46,692	5,894	50.82	133,170	9,565	123,605	22,632
Birmingham Southern.....	44	89,854	1,139	114,587	11,631	32,680	834	58,682	4,091	94.18	6,666	3,552	3,114	1,450
Boston & Maine.....	2,305	3,563,355	1,407,439	5,567,894	641,028	932,342	33,248	2,812,434	136,723	84.41	979,300	182,649	796,650	72,376
Buffalo & Rochester Pitts.....	584	1,223,185	100,545	1,366,747	158,394	346,457	16,094	633,104	32,583	90.61	128,281	26,734	101,547	13,491
Buffalo, Sugar R. R. Corp.....	252	148,499	5,905	158,051	40,218	51,994	2,305	63,359	7,999	98.55	2,278	4,100	1,822	5,795
Canadian Pacific Lines in Me.....	233	269,680	19,908	307,552	40,114	61,217	2,222	177,455	28,833	92.29	23,719	9,500	14,219	93,807
Carolina, Clingfield & Ohio.....	282	312,212	28,316	347,195	41,020	70,892	10,901	100,654	11,734	67.74	112,002	14,800	97,202	34,490
Central of Georgia.....	1,918	1,083,524	412,449	1,653,299	209,283	251,900	29,424	555,413	484,641	66.39	555,634	63,616	491,237	220,209
Central of New Jersey.....	684	2,497,612	540,091	3,339,617	255,493	792,092	27,232	1,539,840	69,644	81.03	633,361	171,958	461,403	140,347
Central of New England.....	301	444,571	22,449	486,746	84,565	124,444	1,510	187,272	7,752	69.05	150,611	17,800	132,811	55,490
Central Vermont.....	411	341,701	65,334	451,498	36,301	71,276	7,974	236,339	10,617	84.85	68,384	18,500	49,884	8,058
Charleston & Western Carolina.....	442	171,354	40,302	224,884	33,126	70,892	3,905	91,745	4,884	72.97	60,780	9,000	51,780	25,322
Chesapeake & Ohio Lines.....	2,479	4,128,508	842,526	5,390,526	616,163	1,073,453	42,833	1,799,305	93,343	68.45	1,681,740	145,000	1,536,553	316,625
Chicago & Alton.....	1,050	1,295,995	390,526	1,818,207	234,154	404,320	26,485	723,585	34,894	78.71	387,044	58,144	328,772	48,711
Chicago & Eastern Illinois.....	1,311	1,553,668	254,764	1,949,152	241,172	534,626	20,493	762,321	58,592	83.18	327,802	79,801	248,001	21,309
Chicago & Erie.....	269	811,743	46,511	919,074	117,334	150,973	14,489	324,253	20,072	89.45	170,855	25,752	145,102	21,305
Chicago & Northwestern.....	8,094	6,396,656	1,881,026	9,172,683	1,570,174	1,807,648	106,572	3,972,499	70,732	87.12	1,548,955	420,561	1,128,394	93,660
Chicago, Burlington & Quincy.....	9,373	8,461,308	1,913,654	11,666,865	1,780,676	1,988,284	106,562	3,989,015	191,458	70.58	3,432,710	500,379	2,932,330	64,659
Chicago, Detroit & Can. Gd. Trk. Jct.....	60	69,672	8,406	78,078	8,391	22,439	1,585	62,178	2,042	100.81	36,771	3,345	33,426	24,302
Chicago Great Western.....	1,496	1,057,918	344,704	1,523,525	275,789	305,305	33,942	593,578	35,071	82.45	267,280	54,382	212,898	24,363
Chicago, Indianapolis & Louisville.....	657	589,197	180,989	834,668	83,468	176,594	19,813	291,373	20,494	70.90	242,818	32,067	210,748	41,581
Chicago Junction.....	12	.....	.....	334,810	40,925	30,803	6,012	169,784	6,012	82.50	58,579	801	57,779	24,470
Chicago, Milwaukee & St. Paul.....	1,305	1,629,399	1,629,399	3,258,798	1,373,247	2,490,132	125,505	4,524,898	202,710	87.28	1,277,067	516,348	760,662	1,392,984
Chicago, Peoria & St. Louis.....	247	157,114	15,547	172,661	28,611	52,582	3,467	123,539	6,204	104.57	8,494	8,250	16,744	28,779
Chicago, Rock Island & Gulf.....	474	249,821	93,295	367,000	36,590	46,037	8,090	124,777	9,658	61.68	140,645	13,154	127,399	49,864
Chicago, Rock Island & Pacific.....	7,823	5,427,738	2,080,223	8,058,052	1,001,110	1,570,275	3,102,696	3,067,129	181,492	73.78	2,112,153	345,360	1,766,793	268,868
Chicago, St. Paul, Minn. & Omaha.....	1,749	1,298,970	418,463	1,846,630	215,829	284,968	19,299	865,768	49,461	78.34	339,903	101,975	237,928	231,075
Chicago, Terre Haute & Southeastern.....	374	307,735	18,146	333,242	32,703	120,286	6,140	124,658	8,869	88.51	38,194	14,500	23,694	19,673
Cincinnati, Indianapolis & Western.....	321	171,002	41,276	238,523	35,550	57,594	5,318	100,811	10,266	87.97	28,679	11,073	17,607	8,360
Cincinnati, New Orleans & Tex. Pacific.....	337	889,051	240,715	1,233,430	82,191	297,044	22,355	413,151	27,646	68.31	390,804	38,250	352,548	30,782
Cincinnati Northern.....	245	304,738	11,533	323,327	34,271	43,219	3,061	87,550	4,338	75.76	55,129	7,867	47,263	13,680
Cleveland, Cincinnati, Chic. & St. Louis.....	2,386	3,727,369	966,384	5,335,390	510,290	960,938	73,923	1,910,511	92,497	68.28	1,660,328	194,780	1,465,347	424,384
Coal & Coke.....	1,197	90,005	29,524	119,529	30,512	33,269	5,400	53,188	113,400	97.61	2,781	5,000	2,281	6,774
Colorado Midland.....	337	125,847	11,118	145,849	38,221	41,059	5,430	92,057	4,918	125.97	36,422	6,863	29,559	6,774
Colorado & Southern.....	1,100	756,728	157,574	969,485	112,073	208,578	9,244	326,325	33,412	71.53	276,084	47,000	229,084	14,167
Colorado & Wyoming.....	42	28,933	2,244	31,177	9,421	17,038	9,207	32,006	4,375	68.66	29,630	3,000	26,630	6,208
Cripple Creek & Colorado Springs.....	116	65,262	10,291	77,410	6,259	11,809	1,244	15,855	2,950	56.64	33,567	8,500	25,067	1,792
Cumberland Valley.....	163	339,274	55,156	394,430	39,672	49,068	4,341	138,855	9,765	55.27	195,804	10,403	185,301	25,664
Delaware & Hudson Co.—R. R. Dept.....	878	2,263,418	187,529	2,950,947	234,749	655,004	23,517	1,180,794	82,050	84.89	392,291	66,640	325,651	69,269
Delaware, Lackawanna & Western.....	955	3,921,651	714,550	5,217,570	333,124	917,501	61,650	2,076,487	91,671	67.00	1,681,740	234,660	1,447,078	700,178
Denver & Rio Grande.....	2,592	1,844,499	358,184	2,202,683	291,511	524,039	22,948	2,288,545	42,432	70.18	695,61			

## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF APRIL, 1918 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			General.	Total.	Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.).	Maintenance of way and structures.	Equip. ment.	Traffic.	Trans- portation.						
Fl. Worth & Rio Grande Ry. Co.	235	\$44,285	\$30,959	\$75,244	313,833	59,443	115,523	225,120	9,492	71.73	88,517	13,172	75,528	55,695
Ft. Worth & Denver City	454	419,878	593,020	1,012,898	580,875	73,087	120,025	334,525	18,461	78.88	122,000	23,098	99,076	23,789
Galveston, Harrisburgh & San Antonio	1,360	1,305,478	356,957	1,762,435	884,151	261,697	17,803	497,573	23,416	92.33	68,734	37,649	28,336	127,495
Georgia	328	301,254	124,127	425,381	1,042,891	6,091,070	1,881,884	2,967,751	131,101	95.99	267,901	449,423	182,334	1,533,530
Grand Rapids & Florida	402	205,347	77,647	282,994	347,146	194,599	3,279	62,459	9,573	72.26	53,976	16,241	43,686	10,610
Grand Rapids & Western	369	422,717	120,025	542,742	1,042,891	6,091,070	1,881,884	2,967,751	131,101	95.99	267,901	449,423	182,334	1,533,530
Grand Trunk	8,255	5,095,212	1,042,891	6,091,070	1,881,884	2,967,751	3,279	62,459	9,573	72.26	53,976	16,241	43,686	10,610
Gulf & Ship Island	307	125,906	194,599	318,505	347,146	194,599	3,279	62,459	9,573	72.26	53,976	16,241	43,686	10,610
Gulf Coast Lines	920	457,807	165,846	623,653	78,311	78,311	13,739	387,833	27,232	59.00	269,524	21,450	248,074	84,138
Gulf, Colorado & Santa Fe	1,937	1,005,056	388,711	1,476,489	291,010	176,186	24,185	475,331	49,020	68.28	468,374	69,708	398,500	220,961
Gulf, Mobile & Northern	402	142,808	27,294	170,102	22,931	33,967	4,609	66,134	8,451	76.07	42,877	11,490	31,387	7,572
Hocking Valley	349	678,445	68,688	747,133	94,533	245,311	6,333	306,764	18,707	84.59	122,187	49,850	72,337	62,404
Houston, East & West Texas	190	128,584	33,568	170,152	24,232	16,086	1,692	77,885	3,181	72.12	47,599	6,405	41,004	2,609
Houston & Texas Central	948	451,461	156,684	608,145	102,121	83,716	11,932	256,205	416,345	72.04	182,418	35,700	146,518	6,148
Illinois Central	4,781	6,484,065	1,402,005	8,484,010	1,185,122	1,637,898	71,796	3,022,780	6,165,844	72.68	2,318,166	428,122	1,889,477	216,953
Indiana Harbor & Great Northern	1,156	690,411	290,318	1,060,748	75,277	100,010	1,931	237,945	11,107	99.17	3,570	10,915	7,344	127,018
Kanawha & Michigan	176	316,382	75,847	392,229	46,594	105,977	3,699	123,523	8,676	70.41	121,961	21,000	100,961	80,973
Kansas City, Mexico & Orient	272	82,794	10,703	93,497	97,766	20,698	4,176	58,393	6,903	132.75	32,012	6,250	25,762	29,417
Kansas City, Mexico & Orient of Tex.	465	85,956	9,704	95,660	18,567	29,649	3,976	52,093	4,042	107.86	7,910	5,000	2,910	6,238
Kansas City Southern	774	1,005,939	164,219	1,260,158	115,067	191,124	19,157	412,509	36,986	61.53	487,469	56,986	430,483	89,539
Kansas City Terminal	24	.....	.....	.....	15,245	17,838	.....	35,955	896	77.98	19,866	18,370	1,496	4,882
Lake Erie & Western	900	657,753	52,169	745,550	92,056	129,524	1,039	300,491	18,499	75.13	192,917	27,159	165,743	24,537
Lehigh & Hudson River	96	171,732	3,448	187,517	187,517	29,113	1,744	84,804	6,446	76.95	43,227	6,000	37,228	34,391
Long Island	1,442	3,941,269	369,969	4,311,238	468,028	1,095,989	67,683	2,261,700	94,730	85.10	700,591	161,470	538,891	230,199
Long Island Sound	398	422,829	1,004,959	1,575,167	169,982	192,229	8,038	659,064	36,652	68.39	497,927	79,652	418,267	197,156
Los Angeles & Salt Lake	1,164	808,172	271,125	1,159,488	169,202	21,098	24,468	417,104	22,132	74.58	249,720	62,258	232,419	168,549
Louisiana & Arkansas	302	117,781	28,207	152,985	24,071	19,185	3,239	46,118	5,113	63.98	55,257	10,875	44,354	29,605
Louisiana Ry. & Navigation Co.	356	182,115	70,714	252,762	28,602	39,307	3,112	96,516	7,202	68.05	70,277	14,000	70,277	42,477
Louisiana Western	207	245,735	90,702	336,437	28,526	39,307	6,404	80,056	8,236	46.36	190,723	13,363	177,252	55,006
Louisville & Nashville	5,074	5,181,797	1,004,013	6,185,810	83,949	1,532,088	97,119	2,724,433	121,954	73.61	1,918,447	238,700	1,678,078	305,399
Louisville, Henderson & St. Louis	199	149,133	54,076	203,209	29,338	33,809	5,549	80,517	3,953	72.16	59,233	3,872	55,354	3,414
Maine Central	1,216	927,036	304,633	1,319,669	187,089	220,204	10,521	640,494	28,629	83.09	231,292	67,087	164,196	92,163
Maryland, Delaware & Virginia Ry. Co.	82	54,439	24,390	78,829	8,292	18,619	975	50,732	1,276	79.895	1,412	1,387	25	4,112
Michigan Central	1,861	3,901,086	1,111,941	5,020,416	580,215	810,849	61,313	2,082,702	85,326	68.53	1,920,782	161,200	1,758,886	734,167
Midland Valley	173	236,597	56,134	292,731	46,443	36,444	2,569	95,944	10,487	63.44	110,601	7,101	103,481	32,758
Mineral Range	100	79,405	2,352	81,757	13,487	18,877	535	43,538	1,061	89.43	9,163	3,300	8,863	18,624
Minneapolis & St. Louis	1,646	761,868	143,461	905,329	170,659	169,170	14,352	409,829	23,220	82.00	172,747	52,694	119,501	85,001
Minn. & International Ry. Co.	195	64,017	21,722	85,739	19,024	12,964	444	38,959	3,362	82.80	15,526	7,935	7,566	16,992
Miss., St. Paul & Sault Ste. Marie	4,243	1,899,968	432,277	2,332,245	462,164	482,630	29,450	1,078,581	66,032	83.64	416,065	192,254	223,811	527,466
Missouri & North Arkansas	365	77,526	36,915	114,441	26,097	20,490	2,430	51,233	5,915	86.49	16,571	5,511	10,585	3,380
Missouri, Kansas & Texas System	3,861	2,808,705	1,045,354	3,854,059	600,568	1,064,626	51,488	1,596,492	137,626	82.93	714,966	159,604	553,473	160,758
Missouri, Okla. & Gulf	332	108,400	27,260	142,696	35,820	40,377	1,978	76,019	8,453	112.72	18,152	9,000	27,239	38,647
Missouri Pacific	7,301	5,583,849	1,429,406	7,013,255	1,010,692	1,189,984	100,038	2,528,171	145,801	66.11	2,562,809	294,541	2,267,496	399,113
Mobile & Ohio	1,159	1,060,838	141,795	1,202,633	132,668	288,171	32,597	510,993	31,347	77.80	284,149	42,997	240,124	19,911
Monongahela Connecting	108	201,968	18,982	220,950	50,648	15,113	1,039	65,113	4,890	60.36	89,952	3,750	86,202	17,182
Monongahela & Tex. R. R. & S. Co.	5	525,169	140,728	665,897	69,309	75,763	9,696	212,945	13,753	53.90	328,653	25,910	302,501	58,688
Nashville, Chattanooga & St. Louis	1,236	1,093,974	410,837	1,504,811	145,076	308,816	38,314	659,432	38,149	74.32	412,308	33,334	378,944	105,018
Nevada Northern	168	188,024	15,536	203,560	17,594	28,247	835	51,433	5,016	49.77	104,233	19,398	84,834	23,832
Newburg & South Shore R. R. Co.	15	.....	.....	.....	15,643	49,803	.....	47,197	2,488	91.66	7,242	5,794	1,948	12,369
New Orleans & North Eastern	203	322,251	123,186	445,437	36,080	69,604	8,082	187,654	10,304	61.71	192,674	27,610	165,063	50,594
New Orleans Great Northern	284	127,489	32,157	169,646	167,433	25,389	2,728	56,062	7,328	67.56	54,321	8,167	46,004	20,803
New York Central	6,079	14,960,389	4,443,132	19,403,521	2,365,137	4,603,146	228,215	8,944,741	483,632	75.73	5,413,119	814,994	4,598,810	693,324
New York, Chicago & St. Louis	571	1,623,248	90,612	1,713,860	182,408	255,220	40,674	706,958	39,323	81.71	549,109	57,500	491,609	188,219
New York, New Haven & Hartford	2,007	3,958,089	3,032,666	6,990,755	860,027	1,484,169	32,044	3,336,047	229,004	81.70	1,499,967	274,000	1,224,998	822,588
New York, Ontario & Western	567	601,375	81,943	683,318	158,819	136,714	10,361	377,362	21,671	84.18	125,892	20,780	105,136	31,088
New York, Philadelphia & Norfolk	121	428,137	65,725	493,862	40,342	158,819	1,045	377,362	10,815	80.17	109,309	14,079	95,231	41,453
New York, Susquehanna & Western	135	261,054	44,539	305,593	35,281	41,575	2,425	182,558	7,295	82.74	56,153	14,917	41,237	9,520
Norfolk Southern	2,083	5,115,428	682,816	5,798,244	606,031	630,398	53,481	1,930,555	105,791	69.26	1,853,362	272,000	1,581,362	9,257
Norfolk Southern	1,907	344,601	103,131	447,732	40,675	75,200	5,972	204,079	19,132	74.45	135,800	33,800	80,219	41,425
Norfolk Southern	6,600	5,494,948	1,242,901	6,737,849	1,350,607	1,037,656	74,125	2,998,316	134,838	71.44	2,050,450	523,698	1,524,579	1,142,198
Norfolk Southern	6,507	200,412	149,502	349,914	58,247	49,122	3,938	130,806	9,353	66.70	135,326	20,557	114,756	44,637
Oregon Short Line	2,311	1,952,288	484,363	2,624,452	395,964	312,738	23,736	694,419	77,144	58.91	1,078,329	158,754	919,142	205,121
Oregon-Washington R. R. & Nav. Co.	2,065	1,407,802	490,357	2,058,159	273,817	242,023	31,126	763,397	79,187	68.46	657,708	123,904	533,484	124,174
Panhandle & Santa Fe	709	385,904	90,370	476,274	65,474	100,018	4,385	158,579	13,966	68.24	158,440	17,432	141,008	52,584
Pennsylvania Company	1,754	5,152,402	1,086,126	6,834,361	1,045,832	1,510,741	74,172	2,928,306	137,966	84.07	1,092,261	285,264	807,066	85,923
Pennsylvania Railroad	5,334	17,513,646	6,824,958	26,914,062	3,287,125	6,670,105	227,160	11,472,445	629,598	84.26	4,236,659	881,412	3,355,449	1,335,762
Peoria & Pekin Union	19	20,790	5,861	26,651	9,154	19,815	11,522	63,627	3,244	79.03	25,448	9,451	15,998	19,540



## REVENUES AND EXPENSES OF RAILWAYS

MONTH OF APRIL, 1918 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues			Maintenance of way and structures			Operating expenses			Operating income (or loss).	Railway tax accruals.	Net from railway operation.	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equip-ment.	Traffic.	Trans-portion.	General.	Total.				
Pere Marquette.....	2,245	\$1,841,472	\$277,158	\$2,118,630	\$269,876	\$379,205	\$29,571	\$934,132	\$55,707	\$1,672,315	71.98	\$551,034	\$75,532	\$175,589
Philadelphia & Reading.....	1,126	5,537,307	633,632	6,170,939	510,801	1,439,082	50,781	2,748,932	101,747	4,867,112	73.71	1,735,962	179,475	1,556,487
Pittsburgh & Lake Erie.....	224	2,163,243	166,520	2,329,763	306,487	442,822	15,944	1,369,517	36,003	1,405,520	57.42	1,065,387	71,900	991,486
Pittsburgh & Shawmut R. R. Co.....	94	92,676	3,140	95,816	29,710	22,098	1,369	52,496	4,572	100,452	78.44	2,697	6,519	20,025
Pitts. & W. Va.....	63	135,614	8,212	143,826	21,534	22,098	1,369	42,903	6,443	122,774	102.76	35,764	24,940	3,181
Pittsburgh, Cinct., Chic. & St. Louis.....	2,398	4,746,554	1,236,783	5,983,337	794,254	1,652,801	83,002	2,697,776	152,147	4,349,523	81.62	1,224,725	230,149	994,453
Pittsburgh, Shawmut & Northern.....	204	88,195	4,874	93,069	34,191	37,271	1,620	51,933	4,394	129,429	134.58	33,258	1,825	8,580
Port Reading.....	21	174,206	224,555	398,761	13,665	9,976	9,976	102,353	1,438	127,473	56.77	97,083	10,000	87,083
Richmond, Fredericksburg & Potomac.....	87	136,216	236,632	372,848	28,308	60,834	2,966	159,877	9,396	268,025	63.60	158,928	13,211	145,709
Rutland.....	415	248,233	88,682	336,915	54,873	65,504	10,518	168,782	8,483	306,162	78.29	90,553	17,562	72,988
St. Joseph & Grand Island.....	258	191,157	28,512	219,669	55,242	32,263	2,067	129,384	6,482	236,002	97.67	5,385	8,606	2,914
St. Louis, Merchants Bridge Terminal.....	9	415	292,172	292,587	28,204	28,204	707	166,702	5,562	245,590	84.06	46,582	8,100	38,449
St. Louis-San Francisco.....	4,761	3,521,371	1,624,495	5,145,866	816,335	1,227,303	52,307	1,989,245	125,309	4,201,906	77.03	1,253,347	231,914	1,020,846
St. Louis-San Francisco & Texas.....	143	132,016	8,007	140,023	9,889	24,425	2,400	46,964	5,302	88,979	59.76	59,910	1,543	58,369
St. Louis Southwestern.....	968	1,023,225	144,298	1,167,523	83,302	163,099	25,951	295,439	31,721	602,346	49.52	614,127	45,755	568,140
St. Louis Southwestern of Texas.....	814	352,091	91,837	443,928	105,862	126,115	7,951	227,312	21,859	494,316	102.36	11,388	19,531	30,959
San Antonio & Aransas Pass.....	712	226,347	87,760	314,107	55,871	73,319	6,113	160,715	8,573	310,952	91.49	32,694	15,000	17,436
Seaboard Air Line.....	3,563	1,898,352	890,975	2,789,327	301,075	560,870	68,832	1,275,327	88,873	2,317,730	76.05	729,818	118,904	1,578,918
Seaboard & Roanoke.....	35	53,095	.....	53,095	13,714	14,216	206	59,357	2,315	61,672	53.50	78,244	1,400	76,844
Southern.....	6,982	5,932,749	3,124,216	9,056,965	936,526	1,750,074	133,779	3,369,033	186,566	6,427,490	64.15	3,592,393	304,774	3,286,753
Southern in Mississippi.....	278	58,196	33,034	91,230	22,389	10,831	2,258	48,438	4,026	87,943	87.38	12,808	9,000	3,803
Southern Pacific.....	7,102	8,035,939	3,089,363	11,125,302	1,499,989	1,917,947	129,464	4,907,568	245,653	8,888,339	72.91	3,302,260	567,856	2,733,177
Spokane, International Ry. Co.....	165	71,898	14,811	86,709	8,437	8,437	1,483	26,711	4,048	53,726	61.13	35,621	3,516	32,105
Spokane, Portland & Seattle.....	554	403,359	141,077	544,436	57,399	51,757	5,749	175,640	16,213	309,907	52.58	279,412	72,000	207,386
Staten Island Rapid Transit Co.....	23	74,706	55,796	130,502	146,112	20,075	1,295	65,239	6,841	117,582	81.45	28,530	9,000	19,530
St. Louis Southwestern.....	1,783	1,375,316	239,135	1,614,451	189,164	289,215	35,901	522,781	56,580	1,096,663	64.53	602,740	72,117	530,354
Tennessee Central.....	293	164,995	70,373	235,368	40,922	41,032	8,299	111,817	3,336	207,797	74.61	87,505	5,377	57,481
Terminal R. R. Ass'n of St. Louis.....	36	2,811	295,302	298,113	55,153	34,542	2,311	35,307	4,105	65,433	62.84	38,858	7,291	31,597
Texarkana & Fort Smith.....	81	81,253	15,250	96,503	12,878	10,846	6,633	123,258	1,228	422,575	67.22	206,025	21,825	183,559
Texas & New Orleans.....	469	433,061	140,119	573,180	72,521	91,424	2,619	171,315	11,027	228,340	72.24	206,025	21,825	183,559
Texas & Pacific.....	1,946	1,274,031	492,326	1,766,357	251,329	305,851	26,194	713,315	62,027	1,373,268	72.24	527,767	86,936	440,581
Toledo & Ohio Central.....	436	589,223	46,900	636,123	127,195	147,564	6,443	317,489	14,376	615,050	92.24	14,464	37,110	29,278
Toledo, Peoria & Western.....	247	81,086	31,560	112,646	32,909	21,159	2,193	53,625	4,735	114,621	96.69	3,922	12,461	7,011
Toledo, St. Louis & Western.....	454	622,040	35,866	657,906	83,274	113,205	18,249	214,948	10,284	434,322	64.30	243,952	19,000	224,952
Trinity & Brazos Valley.....	368	68,186	11,938	80,124	23,500	30,769	1,881	41,142	8,123	105,415	96.53	14,479	6,580	7,859
Ulster & Delaware.....	128	50,336	9,722	60,058	9,546	10,185	1,338	43,555	3,426	68,379	90.11	7,507	2,907	12,749
Union Pacific.....	3,630	4,990,478	1,259,411	6,249,889	1,096,135	1,096,135	73,292	1,990,594	181,204	4,270,457	61.86	2,632,690	288,642	2,343,805
Union R. R. of Pennsylvania.....	98	90,314	518	91,232	144,239	144,239	245	277,073	6,516	467,236	88.12	62,946	5,180	57,766
Utah Railway.....	35	.....	.....	.....	2,288	8,350	18,737	5,489	40,207	47,834	43.98	51,205	3,371	47,834
Vicksburg, Shreveport & Pacific.....	171	123,861	53,221	177,082	21,143	33,919	4,933	62,160	6,350	131,911	67.46	63,681	7,135	24,646
Virginian.....	518	799,712	45,176	844,888	81,976	178,458	5,325	353,429	16,402	636,126	70.40	267,468	41,245	226,213
Wabash.....	2,519	2,723,963	655,149	3,379,112	408,352	586,624	67,525	1,624,406	82,473	2,787,182	76.22	869,115	121,038	747,770
Washington Southern.....	35	49,859	159,239	209,098	18,376	28,419	1,322	86,177	4,585	140,818	54.02	113,538	30,971	107,568
West Jersey & Seashore.....	359	247,900	342,982	590,882	158,993	122,970	7,583	333,720	18,363	646,827	101.87	11,842	41,025	53,147
Western Maryland.....	707	546,373	71,685	618,058	159,764	285,165	17,752	499,592	29,182	1,000,444	92.24	84,219	43,200	161,716
Western Pacific.....	1,022	713,931	105,487	819,418	132,084	110,585	16,493	272,087	19,905	561,750	65.43	206,871	40,213	256,647
Western Ry. of Alabama.....	133	122,567	64,174	186,741	22,049	27,970	4,007	59,311	6,213	121,684	60.27	80,200	6,000	74,200
Wheeling & Lake Erie.....	512	855,797	31,446	887,243	109,176	231,870	8,734	361,806	22,329	791,208	82.84	163,891	52,140	60,032
Yazoo & Mississippi Valley.....	1,382	1,289,081	319,033	1,608,114	215,606	302,963	15,666	600,884	40,939	1,178,486	70.09	502,746	140,946	148,590
Alabama & Vicksburg.....	141	47,693	181,236	228,929	63,098	135,033	20,919	286,946	26,601	537,775	73.55	193,441	44,251	149,698
Alabama Great Southern.....	312	1,662,301	660,371	2,322,672	190,868	551,700	52,832	897,905	52,932	1,757,336	71.36	740,396	83,673	656,532
Ann Arbor.....	293	755,316	137,874	893,190	149,516	185,733	20,343	483,553	35,143	876,882	86.07	83,770	52,400	31,349
Arizona Eastern.....	377	1,176,166	195,846	1,372,012	306,685	810,703	10,249	322,243	61,842	838,020	56.93	634,076	68,221	565,692
Archison, Topeka & Santa Fe.....	8,646	32,071,283	10,785,126	42,856,409	5,748,198	8,434,999	659,596	16,194,837	912,791	31,888,173	69.42	14,719,101	2,228,569	12,487,388
Atlanta & West Point.....	93	352,488	273,919	626,407	72,972	117,926	15,472	241,558	20,838	479,486	67.94	226,205	30,400	195,789
Atlanta, Birmingham & Atlantic.....	639	1,062,507	213,842	1,276,349	278,088	298,561	43,635	662,448	49,449	1,332,415	96.43	42,441	62,800	20,911
Atlantic & St. Lawrence.....	166	502,223	80,418	582,641	96,274	155,239	14,221	592,347	23,446	891,417	141.56	45,384	307,096	151,914
Atlantic City.....	170													

### I. C. C. Employees Liable to Military Service

In response to a House resolution, the Interstate Commerce Commission has submitted a report, giving a list of 164 of its employees of draft age, for whom requests for exemption from military duty or deferred classification have been asked by the commission and allowed. The report states that the civil, structural and electrical engineers, and a number of other employees for whom exemption was requested are members of the commission's organization for valuing the railroads, and that 571 men, out of a total of 2,240 employees, have left the service of the commission to enter the military service.

### Headlight Order Effective July 1

The Interstate Commerce Commission's order of October 11, 1915, requiring locomotives to be equipped with high-power electric headlights, which has been three times extended, becomes effective on July 1. It applies to all new locomotives and all locomotives sent to the shop for general or heavy repairs after that date; and all locomotives must be equipped by July 1, 1920. About 40,000 engines are now equipped with high-power lights, which leaves about 26,000 more to be equipped. The new standard locomotives recently contracted for by the Railroad Administration are to be equipped with lights ordered from the Pyle-National Electric Headlight Company, but on other locomotives the roads may use any light they desire, if it complies with the commission's order. This requires for road locomotives a light "which shall afford sufficient illumination to enable a person in the cab who possesses the usual visual capacity required of locomotive enginemen, to see in a clear atmosphere, a dark object as large as a man of average size standing erect at a distance of at least 800 feet ahead and in front of such headlight." For yard locomotives the distance is 300 feet.

### Regulation of All War Industries

The War Industries Board announced, at Washington, on June 11, that measures would at once be taken to prevent further increase in the volume of war orders and the number of establishments handling them in the area known as the congested manufacturing and transportation district: The New England States, Eastern and Southern New York, Pennsylvania as far west as Williamsport and Altoona, all of New Jersey and Delaware, and Eastern Maryland, not including Baltimore. Exceptions to this policy will be made only if necessary to provide for war needs. The increased industrial activity in the Eastern states has created a requirement for coal which exceeds the limit of possible transportation of coal, plus necessary materials for manufacture. A map of the congested and restricted districts has been issued to all government departments. The new policy will be made effective by the allocating of new contracts whenever possible in Western Pennsylvania, Ohio, Indiana, Illinois, Mississippi Valley regions and the South. The demand for war materials is actually greater at present than the capacity of manufacturing plants, and, consequently, a continual expansion is in progress.

### Increased Employment of Women

The Pennsylvania Railroad reports that in the ten-day period from May 27 to June 5 inclusive, on the lines east, 4,477 employes left the service and 5,122 new ones were hired. The net gain of 645 occurred entirely in the last two days of the period and was apparently sporadic. The figures do not include the forces in the general offices. There was a rapid increase in the number of women employes, accompanied by a decrease in the number of men. On May 27 there were 5,682 women, and on June 5, this number had increased to 7,227. As the total number of both men and women hired exceeded by 645 the number who were lost, it appears that there had been a loss of exactly 900 male employes as against a gain of 1,545 females.

As the total divisional forces (excluding the general office forces) have recently been averaging between 148,000 and

150,000, the rate of "turn over" indicated by the ten-day test is approximately 100 per cent per year. Comparatively few changes took place among the enginemen, conductors and other employes holding positions which are only reached after a considerable length of previous service. Trainmen in other grades, however, were coming and going constantly, and this was true also of shop men, trackmen, etc. There is at present a serious scarcity of firemen, brakemen, car repairmen, trackmen and engine repairmen. There are currently about 14,000 "bad order" cars on the Pennsylvania, or about 4,000 above normal; all due to lack of men.

### Railway Business Association and Government Purchasing Policies

Alba B. Johnson, president of the Railway Business Association, has sent a letter to the members of that organization asking for suggestions as to co-operation of the railway supply industry with the Railway Administration. The letter, in part, follows:

"Government purchase of rolling stock and specialties has now progressed to a point where it is possible to appraise some of the policies which the Railroad Administration is pursuing. It is assumed and in some instances has been announced that none of these policies is to be regarded as a rigid precedent but that suggestions are invited for improvement affecting the future. Many aspects can be effectively dealt with only in a representative way. It is for the Railway Business Association to frame recommendations and urge them upon the authorities. In order that the general executive committee may proceed in the matter with intelligence it is essential that members give us the benefit of their experience and ideas. Statements whether written or oral will, if so desired, be regarded as confidential. The Railway Business Association is the counsellor of each of its members and the advocate of their united purposes. No industrial group has served or can serve the country more vitally. No one can with greater propriety than our members be accorded consideration by the government. We are not mere petitioners for business. We are citizens, making sacrifices like all other citizens, and equipped to aid in the momentous enterprise which engages the nation's energies.

"We are organized to help our members give the fullest co-operation to the Railroad Administration. We are also organized to assure that the Railroad Administration has the fullest understanding of our dignity and potentiality as a guild, as well as of the particular limitations and perplexities under which our establishments are doing their part in the nation's supreme business."

### Hudson Bay Railway

A recent debate in the senate of the Canadian parliament brought out a discussion of the present status of the Hudson Bay Railway, in which it developed that no construction on the road itself has been done during the past year. A bridge, however, was completed at the second crossing of the Nelson river. Up to date, a length of 332 miles of the line has been finished, and track is yet to be laid on 92 miles. Trains are being operated on 214 miles, on a part of which there is daily train service. The part of the line operated has paid expenses. The last year in which any considerable amount of construction material was transported by water to Port Nelson, the terminus of the line, was 1914. In the summer of that year, 36 voyages were successfully made through Hudson strait and Hudson bay, and large quantities of freight were carried by ordinary tramp steamers without hazards or difficulty. With specially constructed ships the season, it is believed, could be considerably prolonged. During six weeks of the summer, engineers and navigators reported that the navigation of the bay was safer than the navigation of the St. Lawrence river to Quebec, and during the remaining six weeks, the navigation of Hudson strait was as safe as the route to Quebec.

Up to March of this year, \$20,161,000 had been expended on the Hudson Bay Railway, of which \$13,814,000 had been



spent directly on the construction of the road and \$6,347,000 on terminals and harbor improvements at Port Nelson. The latter sum also includes the cost of steamships, which are now in general service throughout the year.

The north and south arms of the bridge across the Nelson river at Kettle Rapids were connected in December, 1917, so that track laying can be continued this season. Grading between Kettle Rapids and Port Nelson has been fully completed, and filling and ballasting has been done as far as Kettle Rapids. Owing to the shortage of ocean tonnage, no further shipments of supplies have been made to Hudson Bay this season. A limited program is being carried out at Port Nelson in which materials and supplies on hand are being utilized. The island crib work at that point has been extended and dredging has been continued.

### Chicago Car Thieves Captured

Secret service officers of the Chicago railways arrested six private railroad watchmen and one ten-cent-store dealer in Chicago on June 8 in a roundup of railway thieves. Three of the men are charged with larceny and three others are held on burglary charges. Rosario di Giacomo, the store keeper, is being held on two charges, receiving stolen goods and bribery, having offered Michael Mulvey and Timothy Buttmer, detective sergeants, \$100 each when they arrested him, after they had discovered in his possession more than \$15,000 of loot taken from box cars, and other railroad property. His store, the police declare, has been used as a headquarters for the thieves. When Giacomo offered them the bribe, the detectives took the money for evidence and placed him under arrest. The men will be prosecuted under Section 11 of the Railroad Control Bill, which provides a maximum penalty upon conviction of 10 years' imprisonment or a \$5,000 fine or both for stealing railroad property, or tampering with or knowingly impeding the operation, use or possession of railroad property.

The campaign against stealing from Chicago railroads is being carried on by the Chicago railroad police commission, consisting of T. E. Pratt, special agent of the Chicago, Burlington & Quincy; William Briggs, captain of police of the Pennsylvania lines, and H. H. Germain, superintendent of special service of the Rock Island lines. G. M. Bryan has been appointed chief inspector for the new commission, and Martin Quinn, captain. An office has been opened in Room 646 Transportation building, Chicago, and railroad men are urged as a patriotic duty to report to it any thefts from their companies. While the unification of secret service work on Chicago railroads was first initiated by the committee of Chicago railroad presidents, the commission has received the approval of Director-General McAdoo; and it is a part of the property-protection section of the railroad administration, of which Philip J. Doherty is manager. The scope of the work of this section was outlined in the *Railway Age* of May 10, page 1168.

That the Chicago switching district is a fertile field for more intensive policing is indicated by estimates which place the stolen merchandise in that territory at \$1,000,000 annually. The Chicago railroad police commission will have immediate charge of all railroad premises, including passenger stations, shops, yards, elevators and also of equipment, and will have a force of about 1,000 operatives. In addition, individual railroads will maintain their own special police who can be called on for assistance by the commission when the occasion arises.

### The Roadmasters' Convention

At a meeting of the Executive Committee of the Roadmasters' Association, held in Buffalo on June 1, and attended by about 40 members of that Association, it was decided to proceed with the arrangements for the annual convention of the association, which will be held at the Auditorium Hotel, Chicago, on September 17-19. The program will have particular reference to the problems now confronting the men in the track department. The Track Supply Association will also present an exhibit. It was decided to eliminate all entertainment features.

## Traffic News

The Washington, Baltimore & Annapolis Electric Railway has applied to the Public Service Commission of Maryland for authority to increase passengers fares to correspond with the rates now in effect on government-controlled roads.

### Coal Production

The observance of Memorial Day in the mines in the northern states caused the production of bituminous coal during the week ended June 1 to decrease 1,025,000 tons, or 8.7 per cent, according to the report of the Geological Survey. The total production was 10,774,000 net tons. Anthracite shipments during the week decreased 8,832 cars or 22 per cent. For the country as a whole, improvement is reported in the car situation for the week ended May 25.

### Westbound Fuel Restrictions

Because of the increasing demand for fuel for war purposes in the East, the Fuel Administration, beginning June 20, will prohibit the movement of bituminous coal, westbound, from coal operations on the line of the Chesapeake & Ohio in the Kanawha district, east of and including St. Albans, W. Va. By-product coal and coal intended for the manufacture of gas or for other special purposes may, however, be moved when the consumers have obtained a permit from the Coal Zone Permit Bureau. Public utilities and similar plants, which now have contracts with operators in these producing fields, must also secure permits for the westbound shipment of such coal. When coal from these fields is to be shipped to Toledo and Sandusky, for lake trans-shipment or vessel fuel, the trans-shipper or dock operator must secure the necessary permit.

Similar orders will be at once promulgated, prohibiting the movement of any high volatile coal from the Kanawha and Kenova-Thacker districts of West Virginia and the Big Sandy district of Kentucky to any Indiana consumers.

### Passenger Fares Around New York

The one-way passenger fare between New York city and Newark, N. J., nine miles, has been fixed at 27 cents. From Church street, New York, to Park place, Newark, the passenger trains are run jointly by the Hudson & Manhattan and the Pennsylvania railroads, and for a few days after the new tariffs went into effect, the price for single and round-trip tickets was lower at New York than at Newark, the Hudson & Manhattan having been ordered to postpone its advances; but on June 13, the 27-cent rate was prescribed for both roads; the round-trip rate being 54 cents. Street-car lines between Jersey City and Newark are demanding authority to make advances in their rates to correspond with those of the standard railroads. The ferries between Manhattan and Jersey City are moving to increase their fares from three cents each to five cents, and it is understood that the approval of the Interstate Commerce Commission is assured.

The Hudson River Day Line of steamboats has been authorized by the Interstate Commerce Commission to make its fare between New York and Albany three dollars; distance 143 miles.

The abolition of excursion fares and special rates for soldiers has given rise to loud complaints in many places. Between Camp Upton, L. I., and New York city, 65 miles, soldiers have been carried at one cent a mile, when on short furloughs, and for one-half cent a mile during certain hours of the night; but now, except on formal furloughs of 48 hours or more, and when provided with a special certificate, they must pay the regular rate, which, including the tax, is, for a round-trip, \$4.21. Between New York city terminals and Pelham Bay park, the site of a large camp, there has been a radical increase which will check travel seriously.

## Commission and Court News

### Interstate Commerce Commission

In a tentative report to the Commission, Examiner Thurtell approves the application of the Illinois Traction System for an order establishing through routes and joint rates between points on its line and points on the New York Central.

### Court News

#### Order to Furnish Separate Freight and Passenger Trains Held Unreasonable

An order of the Nebraska Railway Commission required the Missouri Pacific to furnish separate trains for freight and passenger service. The Nebraska Supreme Court holds that it is not *prima facie* unreasonable, but if it is shown that the installation of a separate passenger train would make the operation of the branch line unremunerative, and it is conceded that both passenger and freight business within the state are carried on at a loss, and that the whole interstate system is in the hands of a receiver on account of inability to pay fixed charges, such order may violate the due process clause of the Constitution.—*Marshall v. Bush* (Neb.), 167 N. W., 59. Decided April 12, 1918.

#### Discretion of Directors as to Eminent Domain

The Pennsylvania Superior Court holds that there is nothing in the Public Service Act which authorizes the Public Service Commission to order a railroad company to exercise its power of eminent domain for the purpose of constructing a siding from its tracks to the plant of a light, heat and power company. The discretionary right to exercise such power has always been lodged in the board of directors of the railroad company, and the act does not substitute the discretion of the public Service Commission for that of the board of directors.—*Lycoming Edison Co. v. Commission*, 67 Pa. Superior Ct., 608. Decided July 13, 1917.

#### Abolition of Grade Crossings

The Pennsylvania Public Service Commission approved the plans of a railroad company to change a portion of the road system of a township so as to substitute one overhead crossing for two dangerous grade crossings. No objection was made either by the railroad company or abutting property owners. On appeal by the township from the order the Pennsylvania Superior Court held that the township had no standing to object to the order because it failed to direct the railroad company to maintain the roads changed or to award to the township a lump sum of money for an alleged increased burden thrown on the township.—*Great Bend Tp. v. D., L. & W.*, 67 Pa. Superior Ct., 95. Decided July 13, 1917.

#### Discrimination by Expediting—Consequential Damage

The New York Appellate Division holds that an agreement with a shipper to expedite a shipment at regular rates, no special rate having been published for expediting, is a discrimination, in violation of the Interstate Commerce Act, and relief on such unlawful contract will be denied. It also holds that where there is no other contract between the shipper and the delivery carrier, the rights of the parties are to be measured solely by the bill of lading issued by the initial carrier. Under a provision that the amount of the carrier's liability shall be computed on the value of the goods at the time and place of shipment, the shipper is not entitled to damages for delayed delivery or for inability to use the goods for a certain time from their damaged condition.—*Grossman Mfg. Co. v. N. Y. C.*, 169 N. Y. Supp., 213. Decided February 21, 1918.

## Equipment and Supplies

### Additional Locomotive Orders

The United States Railroad Administration is expected to place shortly orders for 390 locomotives in addition to the 1,025 ordered some time ago; 245 from the American Locomotive Company, 100 from the Baldwin Locomotive Works, and 45 from the Lima Locomotive Corporation. The orders, it is understood, will be divided about as follows: From the American Locomotive Company, 130 light Mikados, 100 6-wheel switching and 15 heavy Santa Fe; From the Baldwin Locomotive Works, 57 heavy Mikado, 13 light Pacific and 30 Consolidation for anthracite burning. From the Lima Locomotive Works, 45 light Mikados. This distribution, however, may be changed, that depending upon the ability of the Lima Locomotive Works to handle its order. When the order is placed it will bring the total of orders placed with the three companies up to 800 to the American Locomotive Company, 570 to the Baldwin Locomotive Works, and 45 to the Lima Locomotive Corporation.

### Car and Locomotive Specialties Ordered

The Central Advisory Purchasing Committee of the Railroad Administration has ordered the principal specialties to be used for the equipment of the 1,025 locomotives and the 100,000 freight cars, for which orders were placed about May 1. In some cases the equipment is to be furnished or purchased by the builders, and in all cases formal orders will be placed by the car and locomotive builders with the specialty manufacturers. Some of the orders for specialties have not yet been definitely settled. The list of those already ordered is as follows:

#### Locomotives

Tender truck bolsters.....	All engines. Pittsburgh Steel Foundry Co.
Journal box for tenders.....	To be purchased by builders.
Air brakes .....	775 Westinghouse Air Brake Co.
	250 New York Air Brake Co.
Brick arches .....	To be purchased by builders.
Radial buffers .....	Franklin Railway Supply Co.
Pilot bumpers .....	To be purchased by builders.
Cradle castings .....	To be purchased by builders.
Blow-off cocks .....	725 Everlasting, Scully Steel & Iron Co.
	300 Southern, So. Loco. Valve Gear Co.
Boiler covering .....	To be purchased by builders.
Uncoupling devices .....	All engines. Imperial, Imp. Appliance Co.
Automatic fire doors.....	590 Shoemaker, Nat. Ry. Devices Co.
	435 Franklin.
Friction draft gear.....	All engine tenders. Westinghouse Air Brake Co.
Valve gear .....	500 Walschaert.
	340 Baker.
	185 Southern.
Reverse gear .....	745 Ragonnet.
	200 Lewis.
	50 Brown.
	30 Mellin.
Headlight turbines and generators .....	All engines. Pyle Nat. Elec. Head. Co.
Side frames for freight engine tenders .....	American Steel Foundries.
	Buckeye Steel Castings Co.
Steam gages .....	510 Ashcroft Manufacturing Co.
	515 Ashton Valve Co.
Steam heat gages for passenger engines .....	90 Ashton Valve Co.
Water gages .....	All engines. Sargent Co.
Injectors .....	480 Nathan Manufacturing Co.
	395 Hancock Inspirator Co.
	150 Ohio Injector Co.
Check valves and stops.....	All engines. Nathan Manufacturing Co.
Lubricators .....	600 Nathan Manufacturing Co.
	425 Detroit Lubricator Co.
Driving box lubricators.....	All engines. Franklin Railway Supply Co.
Metallic packing .....	555 Paxton-Mitchell Co.
	470 United States Metallic Packing Co.
Coal pushers .....	250 Locomotive Stoker Co.
Regulators for passenger locomotives .....	65 Vapor.
	25 Leslie.
Bellringers .....	All engines. Harry Vissering & Co.



Sanders .....	755	United States Metallic Packing Co.
	220	Hanlon Locomotive Sander Co.
	50	Harry Vissering & Co.
Coal sprinklers .....	540	William Sellers & Co.
	485	Hancock Inspirator Co.
Stokers .....	570	Duplex, Locomotive Stoker Co.
	170	Standard Stoker Co.
	35	Hanna Locomotive Stoker Co.
(Switching and Pacific types take coal pushers.)		
Blower valves .....	All engines.	Sargent Company.
Safety valves .....	640	Consolidated Safety Valve Co.
	330	Coale.
	55	Ashton Valve Co.
Brake shoes .....	All engines.	American Brake Shoe & Foundry Co.
Grate shakers .....	All engines.	Franklin Railway Supply Co.
Boiler tubes .....	To be purchased by builders.	
Unit safety draw bar.....	All engines.	Franklin Railway Supply Co.

### Freight Cars

Truck bolsters .....	46,000	American Steel Foundries.
	21,000	Buckeye Steel Castings Co.
	21,500	Scullin Steel Co.
	8,000	Gould Coupler Co.
	3,000	Bettendorf Co.
Couplers .....	23,000	American Steel Foundries.
	15,500	Buckeye Steel Castings Co.
	7,500	Gould Coupler Co.
	8,000	McConway & Torley Co.
	46,000	National Malleable Castings Co.
Side frames, cast steel.....	35,000	American Steel Foundries.
	14,500	Buckeye Steel Castings Co.
	16,000	Scullin Steel Co.
	6,500	Gould Coupler Co.
	28,000	Bettendorf Co.
Uncoupling device for couplers.	All cars.	Imperial Appliance Co.
Pressed steel ends.....	50,000	Pressed Steel Manufacturing Co.
Friction draft gear.....	50,000	Sessions, Standard Coupler Co.
	25,000	Westinghouse Air Brake Co.
	19,000	Cardwell, Union Draft Gear Co.
	6,000	Murray, Keyoke Railway Equip. Co.
Dust guards .....	All cars.	Wm. N. Thornbergh Co.
Air brake hose.....	To be furnished with air brake equipment.	
Brake shoes .....	All cars.	American Brake Shoe & Fdy. Co.
Draw bar yokes.....	50,000	Union Draft Gear Co.
	50,000	Buckeye Steel Castings Co.
Air brakes .....	75,000	Westinghouse Air Brake Co.
	25,000	New York Air Brake Co.

(The number in each case represents the number of cars or locomotives where two or three of a device is used on a single car or locomotive.)

The final apportionment of the order for 100,000 cars has been changed somewhat since the figures were originally announced. The list was published in the *Railway Age* of May 10, page 1169. The changes are as follows:

### REVISED APPORTIONMENT OF CARS

Company	50-ton S. S. Box	40-ton D. S. Box	50-ton Composite Gondola	55-ton Hopper	70-ton L. S. Gondola	Totals
American Car & Foundry Co. ....	9,000	11,000	5,000	6,000	....	31,000
Bettendorf Company .....	3,000	....	....	....	....	3,000
Cambria Steel Company .....	....	....	....	3,000	....	3,000
Haskell & Barker Car Co. ....	6,000	....	2,000	....	....	8,000
Keith Car & Manufacturing Co. ....	....	1,500	....	....	....	1,500
Laconia Car Company .....	....	1,000	....	....	....	1,000
Lenoir Car Works .....	....	2,000	....	....	....	2,000
Liberty Car & Equipment Co. ....	....	1,000	....	....	....	1,000
Magor Car Corporation .....	....	....	1,000	....	....	1,000
Mt. Vernon Car Manufacturing Co. ....	....	4,000	....	....	....	4,000
Pacific Car & Foundry Co.....	....	2,000	....	....	....	2,000
Pressed Steel Car Co. ....	....	....	6,500	5,000	2,500	14,000
Pullman Co. ....	6,000	....	....	2,000	....	8,000
Ralston Steel Car Co. ....	....	....	....	4,000	....	4,000
St. Louis Car Co. ....	1,000	....	....	....	....	1,000
Standard Steel Car Co. ....	....	2,000	5,500	5,000	2,500	15,000
McGuire-Cummings Manufacturing Co. ....	....	500	....	....	....	500
Totals .....	25,000	25,000	20,000	25,000	5,000	100,000

The proposed order for 2,000 40-ton box cars to the Barney & Smith Car Company was not placed, and 1,000 of these cars were added to the order of the American Car & Foundry Company, 500 to that of the Keith Car & Manufacturing Company, and 500 were ordered from the McGuire-Cummings Manufacturing Company.

The proposal which was tentatively advanced at the beginning of the negotiations with the specialty manufacturers that they forego royalties on their patents or pool patents so that various companies could manufacture the same patented device was dropped.

### Freight Cars

THE LOYAL TRADING COMPANY, New York, is inquiring for one steel derrick car.

THE AMERICAN SMELTERS SECURITIES COMPANY, New York, is inquiring for 8 gravity type ore cars, with a capacity of 82 cu. ft.

THE ILLINOIS CENTRAL contemplates the purchase of 7 10,000-gal. steel tank cars for the handling of creosote oil to tie and timber treating plants and fuel oil used in the operation of weed burners on southern lines.

### Signaling

THE CENTRAL OF GEORGIA is to install an electric interlocking at Boundary street, adjacent to the Union passenger station at Macon, Ga. This station is used by the Central of Georgia, the Southern, and the Georgia Southern & Florida. The machine will have 85 working levers. The contract for the apparatus and for installation has been given to the General Railway Signal Company.

THE ILLINOIS CENTRAL is to erect automatic block signals between Springfield, Ill., and Marine, 73 miles, at a cost of about \$155,000, and between Princeton, Ky., and Ilsley, 18 miles, at a cost of about \$51,000. A telephone circuit will be installed in the Grenada district of the Mississippi division between the division and general offices and the principal stations, at a cost of about \$30,000.

THE BALTIMORE & OHIO is to instal automatic block signals on its line, double track, between Laughlin Junction, Pa., about three miles east of Pittsburgh, and Goehring, Pa., about 35 miles west of Pittsburgh, and near Callery. Plans for this signaling were made some time ago, but their execution has been deferred until now. The signals will be three-position, and DC circuits will be used throughout, with low-voltage machines.

The Baltimore & Ohio is making extensive additions to its tracks at Gray's Ferry, Philadelphia, Pa., and has asked for bids for the construction of a large electric interlocking plant. This interlocking is to control the switches and signals at the east end of the Eastside Yard, near Wharton street. Between the extremes of this interlocking there are four main tracks, all of which will be signaled for the operation of trains in both directions.

AUSTRIANS LOOT FOOD TRAINS.—Press despatches state that trainloads of food are being continually looted in Austria. One train of 100 trucks destined for the relief of Vienna reached the capital with only four trucks.

WAR-SAVINGS SERVICE.—The government wishes to enlist every man, woman and child of the nation in war-savings service. When an individual buys war-savings stamps he enlists in the production division of the nation, thereby supporting and backing up the fighting division which is in France and on the seas.

## Supply Trade News

**David T. Hallberg**, sales representative of the P & M Company, with headquarters at Chicago, has been promoted to district sales agent, with the same headquarters.

**Henry Fischer**, general sales manager of the Verona Tool Works, with headquarters at Pittsburgh, Pa., has resigned from that company to go with the Proctor & Gamble Soap Company at Cincinnati, Ohio.

**George M. Coale**, formerly of the Continental Lumber Company at Houston, Tex., has been elected vice-president of the Duncan Lumber Company, with headquarters at Chicago. Mr. Coale will have charge of railway sales.

**Stanley W. Midgley**, general sales manager of the Acme Supply Company, Chicago, has been appointed western representative of the railroad sales department, in the newly-created western office of the Liberty Steel Products Company, Chicago.

The new accessory plant of the **American Locomotive Company** at Richmond, Va., where piston valves, flexible staybolts, reverse gears and the other accessories are to be manufactured, has been placed under the charge of **Ross Anderson** as manager.

At the first annual meeting of the directors of the United States Switch Company, located at Eau Claire, Wis., **F. E. Nicoles**, division superintendent of the Chicago, St. Paul, Minneapolis & Omaha, at Eau Claire, was elected vice-president; **Charles McArthur**, secretary and treasurer, and **Lee T. Pond**, assistant secretary and treasurer. **James W. Hubbard** was re-elected president and general manager.

**C. E. Smith & Co.**, consulting engineers, St. Louis, Mo., announce that in the absence of **C. E. Smith**, who has received a commission in the national army, their business will be conducted under the direction of **W. S. Dawley**, formerly chief engineer of the Chicago & Eastern Illinois, who for several years past has been out of railway service, and has been engaged in consulting engineering work.

**The Bird-Archer Company**, manufacturer of locomotive boiler chemicals, has moved its Chicago offices to 1105 Peoples Gas building, the change having been necessitated by larger space requirements. This company has recently increased its manufacturing facilities by opening a new factory in Chicago, and a new factory at Cobourg, Ontario, besides materially increasing the output of its Philadelphia factory.

**Walter H. Allen**, of the staff of the William Wharton, Jr., & Co., Inc., with office at New York, has been transferred to the Pittsburgh office of this company in the capacity of sales engineer in charge of track work in the Pittsburgh and Cleveland district. Mr. Allen was formerly division engineer of the Pennsylvania Steel Company, with headquarters at Steelton, Pa., and was later attached to the sales organization of the Maxwell Motor Company of Detroit, Mich.

The officers of the Chicago Malleable Casting Company, the Universal Draft Gear Attachment Company, and the Union Draft Gear Company, of Chicago, have formed a new corporation called the Allied Steel Casting Company of Chicago, and have purchased the Harvey, Ill., plant, Whiting Foundry Equipment Company. The officers of the new company are: **J. T. Llewellyn**, vice-president of the Chicago Malleable, president; **C. J. Nash**, president of the Universal Draft Gear, vice-president; **J. S. Llewellyn**, secretary-treasurer and general manager of the Chicago Malleable, secretary-treasurer and general manager; **C. H. Tobias**, secretary and treasurer of the Union Draft Gear, assistant secretary-treasurer. The officers and organizations of the Chicago Malleable Casting Company, the Universal Draft Gear Attachment Company and the Union Draft Gear are not changed, and the companies continue business as before.

## Railway Construction

**ALASKAN RAILROAD.**—The Alaskan Engineering Commission is surveying a branch line between Moose Creek and Baxter, about five miles. **T. W. Secrest**, locating engineer, is in charge of the work.

**CANADIAN NORTHERN.**—This company has authorized the extension of its Elrose branch in Saskatchewan easterly 25 miles to Alsack and grading is now under way. A contract has also been let for the grading on an extension from Gravelburg, Sask., northwest 14 miles towards Swift Current. Another extension will be built from Hanna, Alta., southeast 47 miles towards Medicine Hat. Contracts for the grading of this line have also been let.

**ILLINOIS CENTRAL.**—**M. L. Windham**, Centralia, Ill., has been awarded a contract for the grading work for additional yard tracks to be constructed at that point at a total estimated cost of \$171,000. The work involves about 30,000 cu. yd. of grading; the track work will be done by the Illinois Central's own forces. (May 17, page 1257.)

The Illinois Central has received bids on the construction of mechanical facilities at Fulton, Ky., Amboy, Ill., and Mounds, Ill. The work at Fulton will include the removal of the old roundhouse and other buildings on the site, the construction of a 12-stall roundhouse, a machine shop and boiler room; a concrete stack 5 ft. by 150 ft.; a standard office, store and oil house; a toilet building; 2 Robertson cinder conveyor pits; an engine-men's tool equipment building; a standard brick sand drying house; a standard wet sand bin 77 ft. by 9 ft. 4 in.; a standard dry sand storage bin; sanding equipment, including sand drum, air reservoir, piping and sand delivery spouts; sewers and water works. The work at Amboy involves the clearing of the site by the removal of the present buildings, the construction of a 12-stall roundhouse; a 100-ft. turntable; a machine shop and boiler room; a concrete stack 5 ft. by 150 ft.; a standard office, store and oil house; a toilet building; two Robertson cinder pits; engine-men's tool equipment building; a standard brick sand drying house; a standard wet sand bin 84 ft. by 9 ft. 4 in.; a standard dry sand storage bin; sanding equipment, including sand drum, air reservoir, piping and sand delivery spouts; sewers and water works. The work at Mounds, Ill., will involve the construction of practically the same facilities as at Fulton and Amboy; the roundhouse, however, will have 24 stalls and the turntable will have a diameter of 85 ft. The Illinois Central is asking for bids on a 500-ton frame coal chute at Gwin, Miss., and a 600-ton frame coal chute at Fulton, Ky.

This company's program for 1918 includes considerable track construction. Six additional yard tracks will be built at the Wildwood yard, Chicago, at a cost of about \$75,000 and side track will be laid between Eighteenth and Twenty-eighth streets, Chicago, which with a rearrangement of existing facilities to provide a switching lead, will cost about \$35,000. Second main track will be extended between Belleville, Ill., and Wilderman at a cost of about \$55,000; 21 tracks will be extended in Nonconnaught yard at Memphis, Tenn., at a cost of about \$209,000 and a new northbound departure yard consisting of six tracks will be built at that point, at a cost of \$120,000. At Champaign, Ill., a new six-track northbound yard will be constructed costing \$118,000 and at East St. Louis a new yard containing five additional 60-car tracks will be built and the old yard will be enlarged to include five additional 50-car tracks at a cost of \$96,000.

Water purifying plants will be installed at four points in Iowa on the Albert Lea district of the Minnesota division at a cost of \$33,000 and five plants will be installed on the Cherokee district of the Iowa division at a cost of \$45,000. Additional water facilities at Gilman, Ill., will cost \$26,500 and new water facilities at Pesotum, Ill., will cost \$33,000.

At La Salle, Ill., a new freight house with a second-story office, necessary track changes and a conversion of the present freight house into an engine house will cost approximately \$50,000.

**Joseph E. Nelson & Sons**, Chicago, have been awarded a contract for the construction of new mechanical facilities at Paducah, Ky. (May 17, page 1257.)



## Railway Financial News

**CHICAGO & NORTH WESTERN.**—See editorial comments elsewhere in this issue.

**CHICAGO, ROCK ISLAND & PACIFIC.**—Action on the semi-annual dividends on the preferred stock has been deferred pending receipt of 90 per cent of its estimated standard returns, application for which has been made to the government.

**DENVER & RIO GRANDE.**—Securities to the value of \$10,418,700 belonging to this company have been seized to satisfy the judgment recently obtained by the Equitable Trust Company in behalf of the Western Pacific bondholders. It is understood, also, that 100,000 shares of stock of the Utah Fuel Company of a par value of \$10,000,000, owned by the Denver & Rio Grande, will be sold on June 20 in further satisfaction of the judgment.

**HAWKINSVILLE & WESTERN.**—This company, which recently suspended operation of its 23-mile line between Hawkinsville, Ga., and Perry, was ordered by the Georgia Railroad Commission to resume operation not later than June 20. This road has been operated by the Ocilla Southern under lease.

**ILLINOIS CENTRAL.**—See editorial comments elsewhere in this issue.

**NEW YORK CENTRAL.**—The directors have declared the regular quarterly dividend of  $1\frac{1}{4}$  per cent.

**NEW YORK, NEW HAVEN & HARTFORD.**—J. P. Morgan & Co. and other bankers have made arrangements for the sale of \$3,420,000 6 per cent equipment trust certificates which will provide the bulk of the required funds for the purchase of equipment costing \$4,756,000.

**SIDELL & OLNEY.**—The petition of this company, which is owned by the Cincinnati, Indianapolis & Western, to dismantle its 85 miles of line between Sidell, Ill., and Olney, was denied by the Illinois Public Utilities Commission.

**URUGUAY BUYS RAILWAY.**—The Uruguayan Government has decided to buy the British-owned Central Uruguay Railway. Payment will be made with the proceeds of an internal bond issue. The original concession for the Central Uruguay Railway was granted in 1865. It was to extend from Montevideo to the Rio Negro, 168 miles due north. In 1868 the concession was transferred to a British company. Ten years later the company was reorganized and the terms of the concession were rearranged, the company undertaking to construct a line beyond the northern bank of the Yi River. Since that time three extensions have been built. They are known as the Western, Northern and Eastern extensions. Besides these extensions the Central Uruguay also operates the North Eastern Railway. The total mileage under control is about 980.

**WAR GARDENS OF AN ENGLISH RAILWAY.**—The London, Brighton & South Coast Railway has now 4,000 allotments cultivated by its employees or by the wives and children of men who are serving the colors.

**"PUBLIC ROADS" MAGAZINE ISSUED.**—May saw the birth of a new monthly periodical in the Department of Agriculture, "Public Roads," issued by the Office of Public Roads and Rural Engineering. Its 48 pages, some of them illustrated, contain material intended primarily for state and county highway officials actively engaged in the construction and maintenance of highways. The principal object of the publication is to act as a medium of exchange of knowledge and experience between highway departments of the 48 states. The magazine is designed to be a permanent and complete record of activities and construction under the Federal aid road act. Because of the limited allotment for printing expenses the circulation has been restricted to federal, state and county officials actively engaged in road work.—*Official Bulletin.*

## Railway Officers

### Executive, Financial, Legal and Accounting

**A. C. Needles**, federal manager of the Norfolk & Western, announces that the title of **J. W. Coxe**, controller, has been changed to general auditor, with office at Roanoke, Va.

**James B. Wright**, district attorney of the Louisville & Nashville at Knoxville, Tenn., has been appointed an assistant in the legal department of the Railroad Administration at Washington, D. C.

**James H. Hustis**, having resigned as president and director of the Boston & Maine and its subsidiaries, **Woodward Hudson**, general counsel, with office at Boston, Mass., has been elected as his successor in these capacities.

**W. E. Eppler**, chief of bureau, department of accounts of the Quebec, Montreal & Southern and the Napierville Junction Railway, has been appointed comptroller, with office at New York, and **H. D. Chamberlain**, freight claim agent, has been appointed auditor, with office at Albany, N. Y.

**L. K. Luff**, auditor of revenue of the Delaware & Hudson, has been appointed general auditor; **W. J. Daller** has been appointed auditor of revenue; **A. J. Gies**, auditor of miscellaneous accounts, has been appointed auditor of expenditures, and **W. L. Schneider** has been appointed freight claim agent; all with offices at Albany, N. Y.

**W. H. Finley**, chief engineer of the Chicago & North Western with headquarters at Chicago, Ill., has been elected president to succeed **R. H. Aishton**, who has resigned to serve under the United States Railroad Administration. Mr. Finley was born in New Castle county, Del., and was educated in the public schools at Wilmington, Del., and by private instruction in engineering. He entered the service of the Edgemoor Iron Company at Wilmington in 1881, remaining with that company until 1887, when he began railway work in the bridge and building department of the Chicago, Milwaukee & St. Paul. He left the employ of that road in 1892 to go to the Chicago & North Western as engineer of bridges. Since



W. H. Finley

then he has been successively principal assistant engineer and assistant chief engineer, being promoted to chief engineer in June, 1914. He now becomes president of the same road with headquarters at Chicago, as above noted.

**M. M. Joyce**, general attorney for the Minneapolis & St. Louis has been promoted to general solicitor in charge of the law department of that road. **Donald Evans** has been appointed general attorney to succeed Mr. Joyce. Both Mr. Joyce and Mr. Evans will continue to have headquarters at Minneapolis, Minn. **F. M. Miner**, general counsel, has left the service of the company and that position will not be filled for the present.

**Frank Trumbull**, chairman of the board of the Chesapeake & Ohio, with headquarters at New York, has been elected also president to succeed **George W. Stevens**, who has been appointed federal manager of the road; **H. T. Wickham**, **F. M. Whitaker** and **G. B. Wall**, vice-presidents, all with headquarters at Richmond, Va., have resigned their position with the company, but will continue in charge of their re-

spective departments under the federal administration as assistants to the federal manager; **M. J. Caples** has resigned as resident vice-president of the Chesapeake & Ohio, at Columbus, Ohio, but remains as vice-president of the Hocking Valley. **F. H. Davis** and **C. E. Graham** have been elected vice-presidents of the Chesapeake & Ohio.

### Operating

**Marvin Hughitt, Jr.**, vice-president of the Chicago & North Western at Chicago, has resigned.

**A. C. Needles**, federal manager of the Norfolk & Portsmouth Belt Line, announces the appointment of **George S. Shafer** as general manager. Mr. Shafer's title heretofore was president and general manager, with headquarters at Norfolk, Va.

**S. M. Braden**, general superintendent of the Chicago & North Western, at Norfolk, Neb., was appointed general superintendent of that road in charge of the Western lines, with headquarters at Omaha; **C. T. Dike**, general superintendent at Huron, S. D., was appointed assistant general superintendent at Boone, Ia.; **G. W. Dailey**, superintendent of the Wisconsin division at Chicago, was appointed assistant general superintendent at Huron, S. D.; **C. H. Reynolds**, superintendent at South Norfolk, Neb., was appointed assistant general superintendent at Norfolk, Neb.

### District Directors and Assistant District Directors

**James H. Hustis**, president of the Boston & Maine, and receiver in charge of the road under the United States court, with headquarters at Boston, Mass., has been appointed district director of the United States Railroad Administration, in charge of New England railroads, with headquarters at Boston. Mr. Hustis was born in New York city in 1864, and began railroad work as office boy in the general manager's office of the New York Central & Hudson River. In 1891, he was appointed trainmaster on the Harlem division, and two years later was made assistant superintendent. In 1900, he was appointed superintendent of the Harlem division, and later was made superintendent of the River division (the West Shore), and served as superintendent of the Rome, Watertown & Ogdensburg, of the Hudson division, and of the Putnam division. In 1907, he was made general superintendent of the Western district, and in October of the same year was given charge of the Boston & Albany, with the title of assistant general manager. In June, 1911, he was given the title of vice-president, and the operation of the Boston & Albany was put entirely in his charge. In November, 1913, he was elected president of the New York, New Haven & Hartford, and in August, 1914, he resigned as president of the New Haven to become president of the Boston & Maine.

**Percy R. Todd**, president of the Bangor & Aroostook, with headquarters at Bangor, Maine, has been appointed assistant to district director of the United States Railroad Administration and general manager of the Bangor & Aroostook, with office at Bangor. Mr. Todd was born on December 4, 1859, at Toronto, Ont., and was educated in the Collegiate Institute at Ottawa. He began railway work as clerk and telegraph operator in the general office of the St. Lawrence & Ottawa, now a part of the Canadian Pacific, at Ottawa, which positions he held until 1875. He served until 1882 as Canadian agent of the Ogdensburg & Lake Champlain, then as general traveling agent of the National Despatch Line, at Chicago, until 1885; and from July to December of the same year, he was commercial agent of the New York, West Shore & Buffalo, at Albany, N. Y. Later he was chief clerk in the general freight department of the same road at New York, leaving in October, 1886, to become general freight and passenger agent of the Canada Atlantic, at Ottawa, Ont. He served in that capacity until December, 1889, when he went to the West Shore Road as general freight agent. Three years later he was appointed traffic manager of that road. From February, 1901, to November, 1903, he was second vice-president of the New York, New Haven & Hartford; then for two years, first vice-president of the same road. From January, 1907, to January 1913, he was vice-president of the Bangor & Aroostook, and then became president, which position he held to the time of his present appointment.

**H. A. Worcester**, who has been appointed district director of the United States Railroad Administration in charge of the railroads in the Ohio-Indiana district, with headquarters at Cincinnati, Ohio, was born November 18, 1862, at Albany, N. Y. He is a graduate of Yale University, and entered railway service in December, 1885, as assistant stationmaster of the New York Central & Hudson River at the Grand Central station, New York City. In August, 1891, he went to Buffalo, N. Y., where he did clerical work for the Lake Shore & Michigan Southern. A year later he was appointed assistant trainmaster of the Franklin division and in February, 1893, was promoted to superintendent of the Lansing division. He was transferred to the superintendency of the Detroit division in June, 1896, where he remained until November, 1902, when he was appointed superintendent of the Eastern division. In February, 1905, he became superintendent of the Western division, but remained in that position only three months, at the expiration of which time he entered the service of the Michigan Central as assistant general superintendent. In November of the same year he was promoted to general superintendent. In February, 1906, he returned to the Lake Shore as general superintendent, and in the following October was appointed assistant general manager of the Cleveland, Cincinnati, Chicago & St. Louis, with office at Cincinnati. He was appointed general manager of this road in July 10, 1913, and since January 1, 1916, he has served as vice-president and general manager of the same road.

### Traffic

**F. H. Hill**, traveling freight agent of the Atlanta, Birmingham & Atlantic, has been appointed division freight agent, with office at Fitzgerald, Ga., vice **C. I. Allen**, who has been appointed general agent, with office at Birmingham, Ala., vice **V. E. Whitaker**, promoted.

### Engineering and Rolling Stock

**Don C. Bowman**, assistant engineer, in charge of the construction of new yards and other improvements on the Wabash, at Granite City, Ill., has been promoted to division engineer maintenance of way, with headquarters at St. Louis, Mo.

**W. M. Punter**, Canadian manager of Saxby & Farmer, Ltd., with headquarters at Montreal, Que., has been appointed signal engineer of the Canadian Northern, eastern lines, with headquarters at Toronto, Ont. **W. Adams** has been appointed signal inspector at Port Arthur, succeeding **H. E. McDonald**, who has been transferred to the Duluth, Winnipeg & Pacific, succeeding **K. Lafferty**, resigned. **J. J. Crowe** has been appointed acting signal inspector, at Edmonton, Alb., in the place of **R. C. Gardner**, who has enlisted in the United States army.

### Railway Officers in Government Service

**G. W. W. Hanger**, assistant commissioner of the United States Board of Mediation and Conciliation, has been appointed assistant director, Division of Labor, of the United States Railroad Administration.

### Obituary

**H. G. Sexton**, superintendent of the Eureka Nevada Railway, with office at Palisade, Nev., died at Colfax, Cal., on May 23, 1918, at the age of 50. Mr. Sexton had been in the railroad work in the construction and operation departments for about 25 years.

**Robert Dunlap**, western solicitor of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, died at his home in that city on June 10. Mr. Dunlap was born at Cincinnati, Ohio, on October 4, 1853. He was educated at Cincinnati University, and entered the railway service of the Santa Fe in 1883 as assistant attorney, since which he has been consecutively, from 1895 to 1897, assistant to the general solicitor for the receivers of that road; from 1897 to 1915, general attorney of the reorganized road, and from 1915, western solicitor. His railroad career has been entirely with the Santa Fe, he having served that road in a legal capacity continuously for a period of 35 years.